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Original Articles

Floss Silk Lattice Repair for Direct Inguinal Hernia

RODNEY MAINGOT, F.R.C.S. (Eng.), F.I.C.S.
LONDON, ENGLAND

DURING the last six years the floss silk posterior lattice-repair operation, which is based on the darn-and-staylace procedure of Sampson Handley [3] (1918), has been employed exclusively, with excellent results, by the writer and his assistants at an E.M.S. hospital for all cases of direct inguinal hernia. It has also been adopted for large oblique herniae in which the internal ring and the floor of the inguinal canal have been unduly stretched or where the muscular and fascial supports appear weakened and atrophied, and also for certain types of recurrent inguinal hernia.

The immediate and late results of this operation in a series of over five hundred cases have been so gratifying that we now no longer make use of Gallie's [1] fascial repair (1921), McArthur's [4] operation (1904), the slide operation so warmly advocated by Tanner [8] (1942), or the Halsted [2] rectus flap method (1893), when dealing with the varieties of rupture under consideration.

OPERATIVE TECHNIC

The inguinal regions and the upper third of the thighs are carefully shaved and cleansed with soap and water a few hours before the operation is due to start. No antiseptic solution is applied to the operation site while the patient is in the ward.

For the average patient a spinal anesthetic is found to be efficient, but for the aged and for the poor-risk case cyclopropane is the anesthetic of choice and is, in our opinion, far better than a field block. We employ local anesthesia only for those cases of strangulated hernia in which the operative risk is very great.

The patient is placed on his back on the operating table, which is slanted in a slightly anti-Trendelenburg position, after which a sandbag is placed beneath the buttocks to throw the inguinal regions forward, and the knees are flexed by placing them on a small hard round pillow to relax the abdominal muscles.

The inguinal regions, the genitals, the upper third of both thighs, the whole abdomen and the flanks are then lavishly painted with tincture of iodine before applying the mackintosh sheets and the abdominal and limb drapes. When this is done, the small exposed quadrilateral area of skin in the inguinal region is again freely painted with tincture of iodine.

A transverse crease incision is used, starting one finger-breadth below and medial to the anterior superior iliac spine, crossing the inguinal ligament at the junction of the middle and outer third and finishing one finger-breadth above the pubis and half an inch short of the midline. This incision has many advantages over the usual oblique one, which is placed half an inch or so above and parallel to the inguinal ligament. The cosmetic result of the crease incision is better, as the fine scar lies in one of the natural flexion creases of

the body; keloid formation is almost unknown; it crosses the deep plastic repair at only one point, thus minimizing the risk of infection from the surface to the vulnerable muscular planes underneath; and the exposure obtained during the dissection is, with good retraction, more than ample.

The crease incision is made cautiously through the skin down to the subcutaneous tissues in which the superficial femoral vessels may be seen coursing upwards, inwards and outwards. The knife, which must be considered as contaminated after making this incision, is discarded and a fresh one picked up for continuing the dissection. The superficial femoral blood vessels are identified and isolated from the fatty tissues before they are clipped with Halsted or Dunhill forceps and divided. All small bleeding points are likewise seized with fine-pointed artery forceps and each is tied off with No. 0 twisted silk, the ligatures being cut as close to the knot as possible.

When complete hemostasis is assured, the edges of the wound are once again painted with tincture of iodine and four tetra-cloths are affixed to the wound margins with Scott Ridout forceps. All the instruments which have been used in making the incision are now removed and a fresh set is employed for the remainder of the operation until the skin margins are ready for suturing, when once again another set of instruments is employed. Three sets of freshly sterilized instruments are thus used during the three most important stages of the operation—the making of the incision, the dissection and the repair of the hernia, and the closure of the wound.

The deep fascia overlying the external oblique aponeurosis is divided in line with the incision, and the fatty areolar tissues clinging to the aponeurosis are reflected with the handle of the knife upwards and outwards to one inch beyond the internal abdominal ring and downwards as far as the inguinal ligament but not beyond it. Dissection with the knife should not be carried down to the external ring itself as numerous penetrating blood vessels pierce the intercolumnar fascia here and are difficult to clip with hemostats after they have been divided. Hemorrhage here must be avoided at all costs, as it is difficult to detect and to control, and if unobserved it may subsequently give rise to a troublesome hematoma, which may suppurate or at best take weeks to absorb. When, therefore, the dissection approaches the external abdominal ring, the knife should be laid aside and a gauze swab be wrapped around the right index finger which is then used to push aside the structures here in order to display the pillars of the ring and the emerging cord.

A small cut is next made with a knife in the aponeurosis of the external oblique in the line of the pillars and approximately one inch from the point where they diverge. The upper and lower leaves are steadied and elevated with artery forceps to allow a finger to be inserted beneath the aponeurosis and the underlying internal oblique and cremaster muscles. This finger gently detaches any structures which may be adherent to the under-surface of the aponeurosis, such as the ilio-inguinal and ilio-hypogastric nerves and the fibres of the cremaster muscle.

The incision in the aponeurosis can now be safely extended upwards and outwards to a point one inch above the internal abdominal ring and downwards and inwards through the external ring and the arching fibres of the attenuated intercolumnar fascia.

The upper leaf of the aponeurosis is then reflected off the underlying structures with sweeping strokes of the finger or with the handle of the knife, freely displaying the arching muscular fibres of the internal oblique, the cremaster muscle, the ilio-hypogastric nerve, the shiny outer border of the rectus sheath, and the lateral aspect of the pubic crest to which the rectus muscle itself is attached.

The lower leaf is cleared until the inner surface of the inguinal ligament is visible as far as its point of insertion into the pubic spine. As the cremaster muscle is being liberated from the lower leaf, great care must be taken not to crush or otherwise injure the ilio-inguinal nerve which lies partly on the surface of this muscle and along a line which runs roughly parallel with the inguinal ligament.

A fold of cremaster muscle immediately below the ilio-inguinal nerve is picked up with two dissecting forceps and divided with scissors in a longitudinal direction, thus exposing the subcremasteric areolar space. The closed points of the scissors are pushed up and down in this space to clear the cord until it is quite free, and the muscle is then divided in the line of its fibers, upwards and outwards to within one-third of an inch of the arching fibers of the internal oblique muscle and downwards through the external ring. In dividing the muscle in an upward direction a small arterial twig of the deep epigastric artery is invariably cut across and should be instantly caught and ligated, while in cutting the cremaster muscle in the opposite direction care must be taken to preserve the ilio-inguinal nerve where it dips towards the neck of the scrotum.

The upper and lower leaves of the cremaster muscle are grasped with Allis forceps and held apart to aid in the isolation of the cord. The upper leaf should be dissected first, after which the lower leaf is freed and any muscle fibers which cling to the cord are gently pushed aside by gauze dissection so that this structure can be picked up between the thumb and index finger of the left hand and be drawn upwards and outwards from its bed. The loose attachments of the cord posteriorly are quickly freed so that all the constituents of the cord from the external to the internal ring can be readily examined through its diaphenous covering of infundibuliform fascia.

If a *small congenital oblique sac* is present, it will readily be seen overriding the cord. In such a case the infundibuliform fascia should be incised, the sac isolated from the vas and vessels down to and slightly beyond the neck of the sac, and after opening the fundus and replacing any contents into the peritoneal cavity, the neck of the sac should be clearly displayed, transfixed and ligated with No. 3 silk. The ligature should be cut short and the sac divided about a third to half an inch beyond it. The stump immediately recedes and disappears from view behind the opening in the transversalis fascia.

The internal ring is examined with the finger, and if the ring is *unstretched* and the floor of the canal is staunch and unyielding, the cord is dropped back into its bed and the various layers —the cremaster, the external oblique aponeurosis, the deep fascia and the subcutaneous tissues and skin — are closed in sequence, using a series of closely applied sutures of fine silk.

In those instances in which the internal ring is evidently *stretched* by a moderately large indirect sac but in which the fibro-muscular sphincteric mechanism is adequate, it is sufficient to narrow the ring to accommodate the

cord snugly by stitching the adjacent crescentic margin of the transversalis fascia to the inguinal ligament with a few interrupted sutures before completing the reconstruction procedure which has just been described (Ogilvie,[7] 1936).

If, on the other hand, after removing the sac of an oblique hernia the internal ring is found to be *widely dilated* and the posterior floor of the canal partially or wholly deficient, in fact so weak and yielding as to constitute a direct rupture, it is wiser to repair the canal throughout its entire length with a floss silk darn, transplanting the cord subcutaneously, than to rely upon a strict anatomic reconstruction.

In many such cases it is indeed tempting to dissect out the transversalis fascia and to affix this membrane to the inguinal ligament or to Cooper's ligament with sutures, as has been suggested by McVay[5] (1942), in hopes that this attenuated fascial curtain will form an efficient barrier against subsequent herniation. In practice, however, this plan, even when the transversalis fascia has been reinforced with fascial strips taken from the thigh or from the external oblique aponeurosis, has not proved entirely reliable in my hands and has in consequence been more or less abandoned.

When a *large indirect hernia is associated with a direct hernia* or with a so-called diverticulum of the transversalis fascia, after opening the oblique sac the index finger can be introduced into the peritoneal cavity to explore the defect in the floor of the inguinal canal from behind, after which all the redundant peritoneum can be readily gathered lateral to the deep epigastric artery and cut away after closing the neck of the

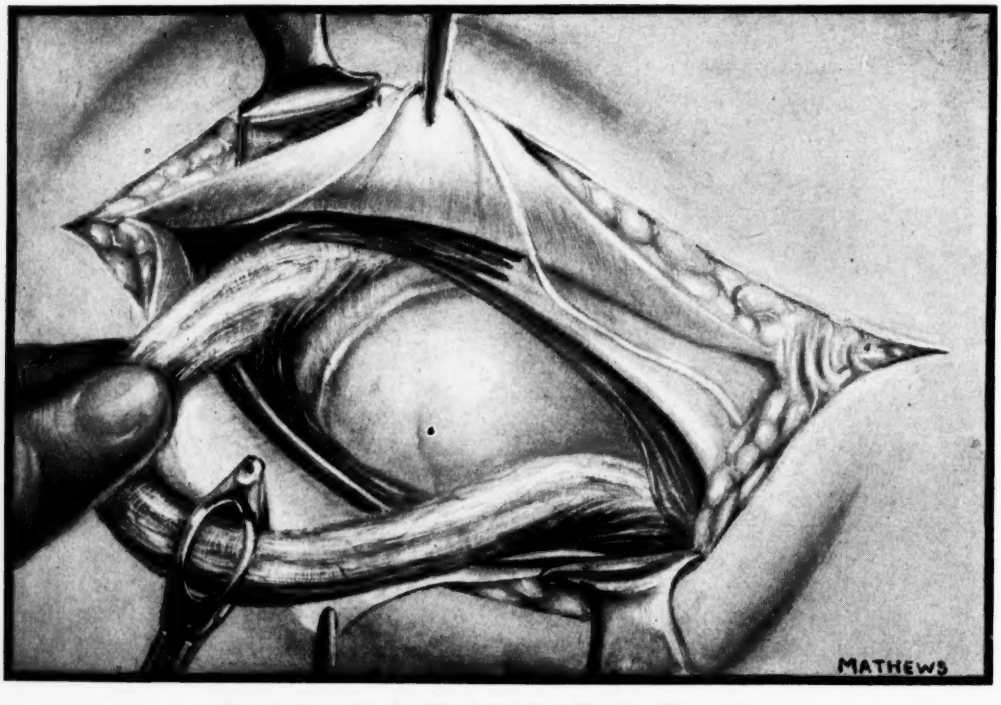

Fig. 1. Operation for Direct Inguinal Hernia. The exposure.

sac from within with a purse-string suture of strong silk.

Again, in the common type of *direct inguinal hernia* (Fig. 1) there is much to be gained by incising the small tongue of peritoneum which clings to the medial border of the cord at the internal ring and testing by touch the integrity of the posterior wall of the canal from behind. The cut margin of the peritoneal sac is clipped with a number of hemostats, and by a combination of gauze dissection and traction the loose membrane can be easily drawn forwards between the issuing cord and the deep epigastric artery and the excess excised after suturing the aperture in a watertight fashion. (Figs. 2, 3 and 4.)

The cut margins of the cremaster muscle are now approximated behind the cord to facilitate the introduction of the floss silk suture (Fig. 5) to fortify, however feebly, the posterior floor, and also to reduce the caliber of the cord which is subsequently made to lie subcutaneously.

The operative field is now ready for the introduction of the floss silk lattice. Floss silk is to be preferred to catgut or other nonabsorbable suture material because it readily becomes incorporated into the tissues in which it is buried, its numerous gossamerlike fibrils lying loosely together form an excellent scaffolding for the unhindered invasion and infiltration of fibroblasts, and it produces in a very short time a fibromuscular sheet which is strong enough to withstand the greatest strain. In addition to this, it is cheap, readily available, easy to sterilize, and simple to insert when threaded on small or medium-sized round-bodied, trocar-pointed Mayo needles. Floss silk is

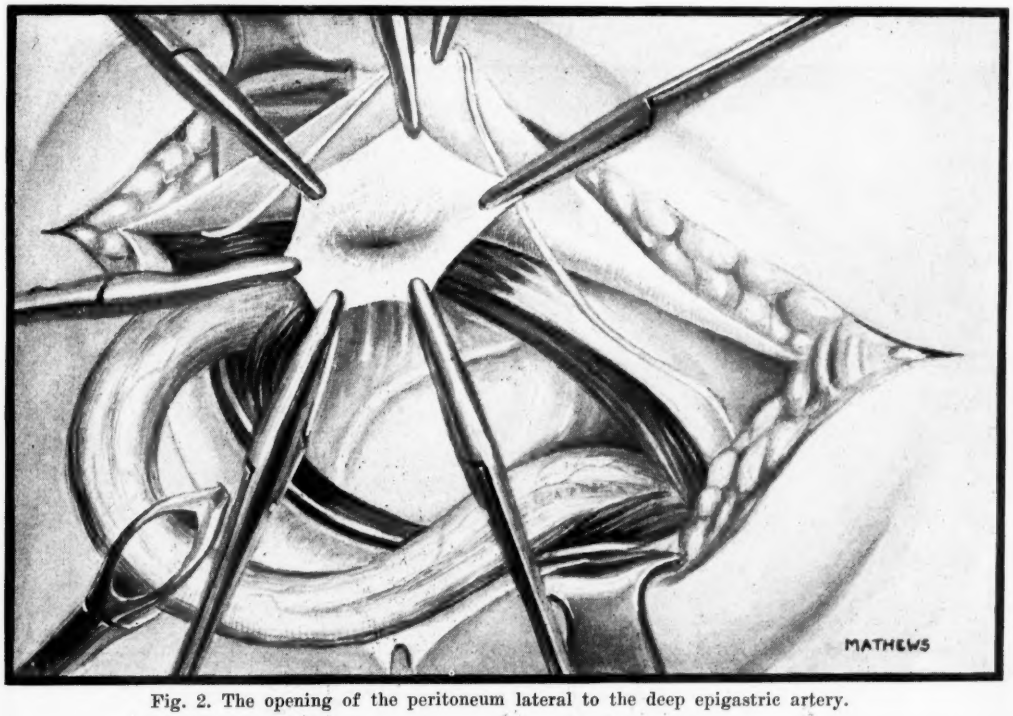

Fig. 2. The opening of the peritoneum lateral to the deep epigastric artery.

Fig. 3. Testing the posterior floor of the inguinal canal with a finger introduced into the peritoneal cavity.

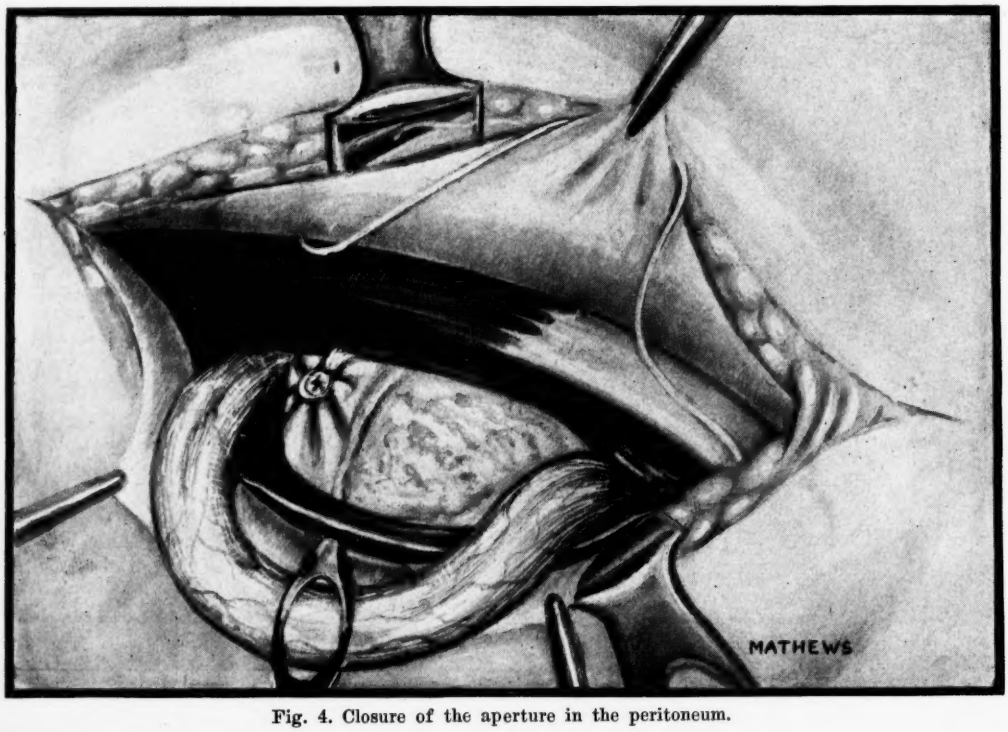

Fig. 4. Closure of the aperture in the peritoneum.

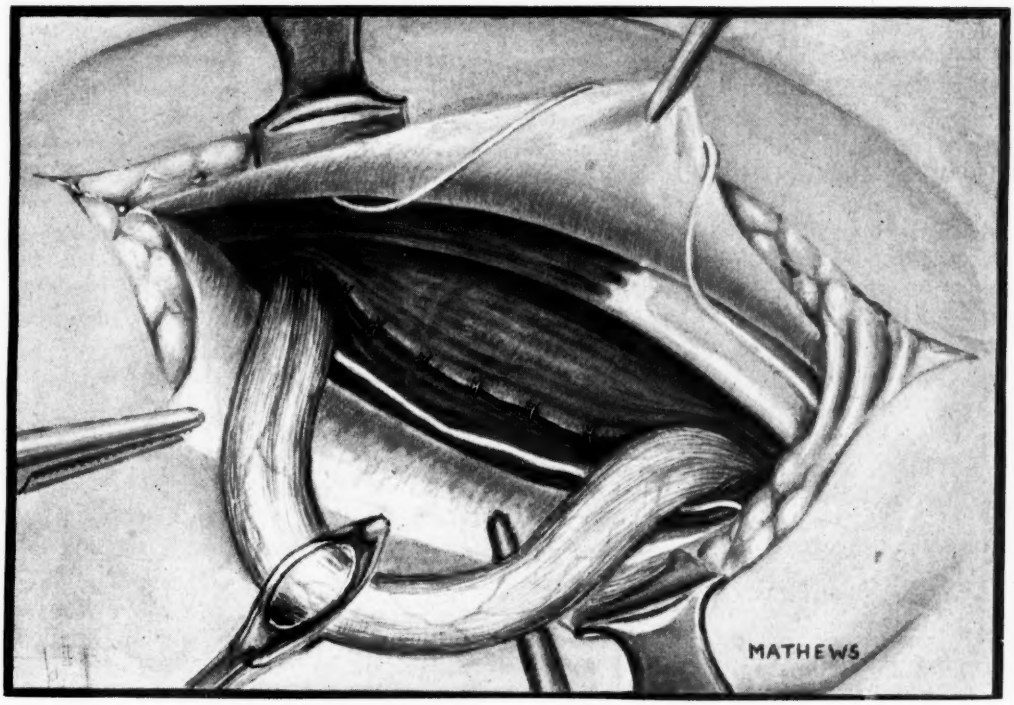

Fig. 5. Closure of the cremaster muscle.

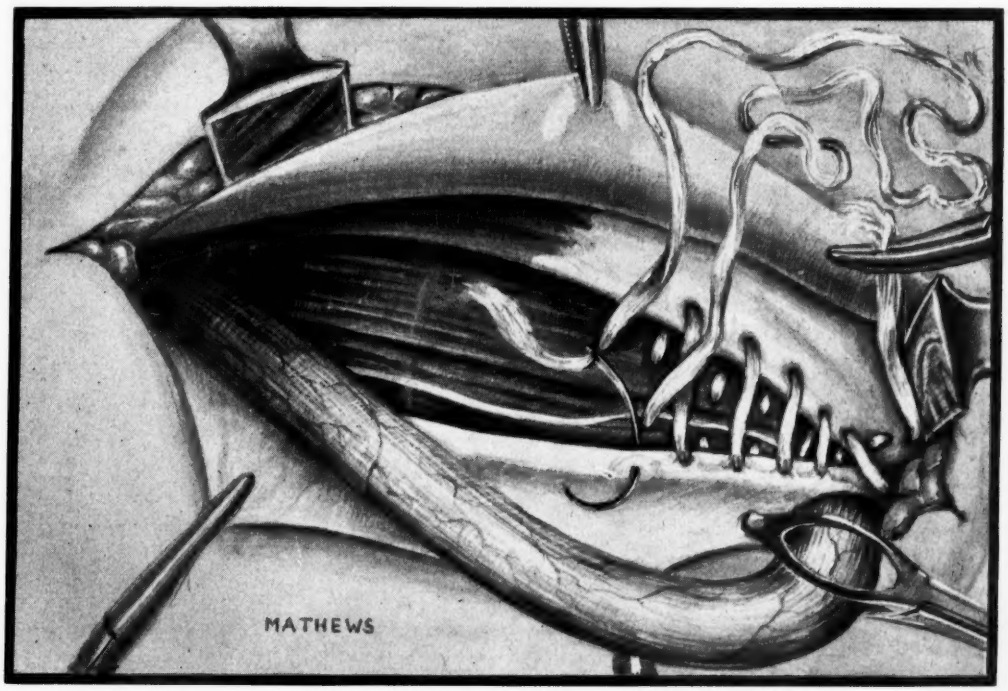

Fig. 6. The darning of the posterior floor of the inguinal canal with floss silk; the first row of sutures.

again preferable to fascia lata strips because it does not add another operation to the hernial repair and the fibrous tissue response following the introduction of this suture material is just as great as when living autogenous sutures are employed.

Floss silk is supplied in ampoules (Messrs. John Bell and Croyden) ready for use, or on spools. The ampoule (containing a small spool of about one yard of floss silk) is immersed in dettol and spirit for about half an hour before the operation is due to commence. After the silk has been removed from the glass container it is thoroughly rinsed in sterile saline solution and then in doubly distilled water in order to remove all traces of chemicals which may be irritating or injurious to the tissues.

It is now my custom to take a 24-inch strand of floss silk from a spool and to boil it for one hour before use. The floss silk should not be immersed in weak mercurial lotions, flavine solution, sulphonamide pastes, liquid paraffin and the like, as these substances are tissue irritants and excite an outpouring of serum—one of the greatest dangers to a promising herniorrhaphy.

The floss silk is introduced in the following manner. The first stitch takes a firm bite of the periosteum of the pubic crest and then another bite at the origin of the tendon of the rectus muscle. The end of the suture is not knotted at this stage but caught with artery forceps. The cord is held out of the way while the suture is continued in a lateral direction, taking first a bite in the periosteum over the pubic spine, then of the edge of the rectus sheath, then of the inguinal ligament, then of the conjoined tendon, then of the in-

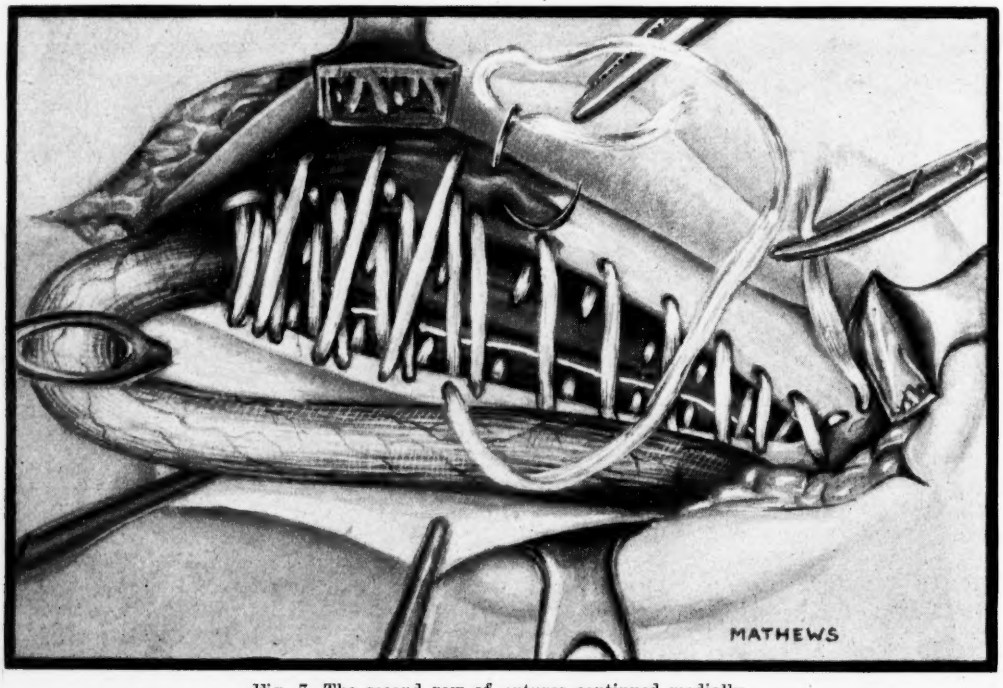

Fig. 7. The second row of sutures continued medially.

guinal ligament, then of the conjoined tendon, then of each side of the cremaster, then of the inguinal ligament, and then back again to the conjoined tendon, and so on. The stitches are inserted almost vertically and close to one another without any strain or pull on the muscle or the inguinal ligament (Fig. 6).

As the internal ring is approached, the cord is pulled firmly outwards and the suture is continued until it can be felt that an opening only the size of the tip of the little finger remains. At one time we were in the habit of reinforcing the internal ring by buttressing the cord on all sides with floss silk sutures in the manner employed by Gallie in his fascial repair operation; but now we omit this step, preferring to place the emerging cord between the soft yielding muscles laterally and the silk wall that is built up on its medial aspect.

The suture is next continued back towards the starting point, but this time with much wider traverse, taking on one side a bite of the inguinal ligament between the stitches of the previous row, then on the other side the fibromuscular conjoined tendon. The stitches are once again inserted without the slightest degree of tension and are passed in such a manner that the whole of the posterior floor of the inguinal canal is effectively darned with a lattice of floss silk (Fig. 7).

The stitch is completed by taking a good bite of the periosteum over the pubic spine and the crest of the pubis and by tying the ends of the silk sutures together so that the knot will lie beneath the aponeurosis of the external oblique close to the pubic crest.

With the cord elevated, the edges of the external oblique aponeurosis are approximated with a series of inter-

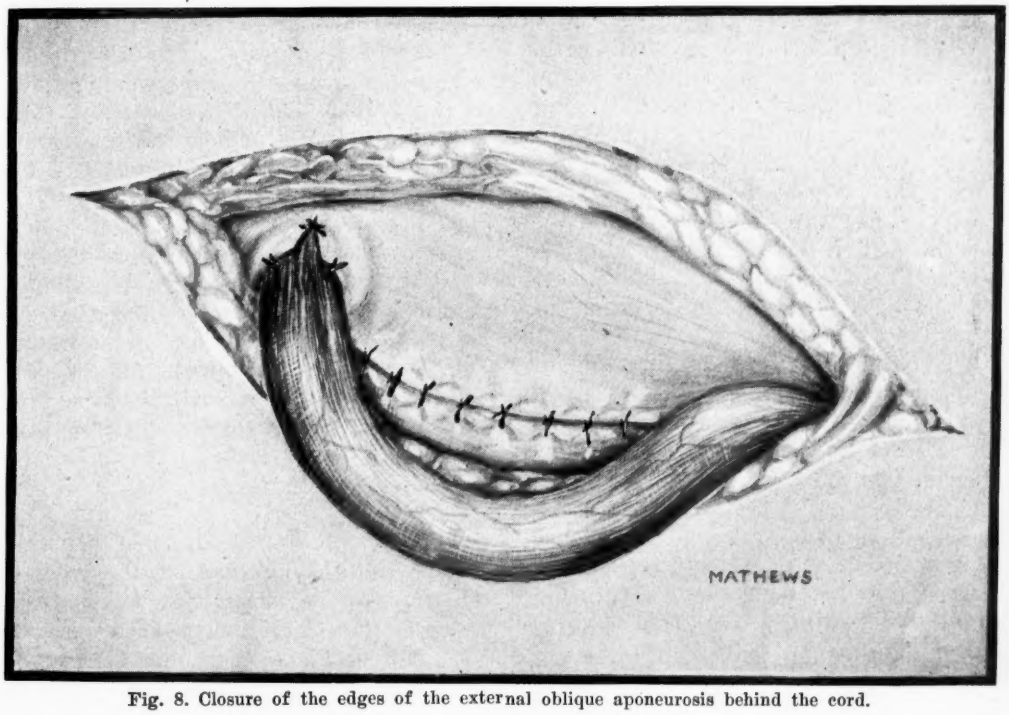

Fig. 8. Closure of the edges of the external oblique aponeurosis behind the cord.

rupted sutures (Fig. 8), or if the aponeurosis has been much stretched the edges may be overlapped. The cord is finally laid back on its new bed before the deep fascia and the subcutaneous tissues are drawn together with interrupted stitches of fine silk. The skin edges are sutured with vertical mattress sutures of fine black silk or deknatel.

The wound is finally painted with tincture of iodine and a small gauze dressing applied, this being kept in place by a broad strip of elastoplast.

POSTOPERATIVE TREATMENT

The patient is kept lying flat in bed, the head being supported with one or two pillows. Omnopon gr. 1/3 is given as required to relieve pain, a fluid diet is enforced until the bowels work, which is usually on the third or fourth postoperative day, and the routine "shake-up" treatment is carefully followed as a precaution against atelectasis.

Exercises directed towards strengthening the muscles in the inguinal region are not carried out, as it is important to avoid the formation of serum in the wound or any strain on the suture line during the process of healing.

The skin sutures are removed on the fourth or fifth day and the wound redressed with gauze, which is kept in place with an elastoplast dressing for about ten days.

The patient is allowed to get out of bed on the twentieth day after operation, and on discharge is told to avoid active work and strenuous exercise for at least two months.

There are only two complications to be feared in herniorrhaphy. The first is atelectasis and the second sepsis. We have found the "shake-up" treatment, *i.e.*, deep breathing exercises, making the patient cough at stated intervals, etc., to be of the greatest help. Infection of the wound and stitch sinus are of course due to faulty technic and not to the silk material which is used; but any surgeon who uses silk routinely in clean cases will occasionally meet with a case of sepsis. The sepsis may be superficial, in which case no harm results; or it may arise from the deep sutures, in which case after trying fomentations for two weeks or so, if the condition does not respond or resolve, it is better to open up the wound, to remove all the silk sutures and to complete the repair with fine sutures of No. 0 twenty-day chromic catgut, leaving the wound partly open.

In our last one hundred consecutive cases there has been sepsis in two cases, but on removing the offending ligatures, the wounds have healed up satisfactorily and apparently quite strongly.

There is no operation that can be compared to this floss silk lattice method for large herniae or recurrent herniae in enfeebled subjects. The all-around recurrence rate following this method is not higher than 3 per cent and this includes cases in which the operation has been performed in obese patients, in the aged and in patients who have had two or three, or even sometimes four, previous herniorrhaphies. Sepsis most frequently occurs in obese patients. We make a point now of operating on only one side at a time in cases of bilateral hernia, and we avoid supplementary operations, such as those for varicocele and hydrocele, when operating on a hernia.

SUMMARY

1. A detailed account of the technic of the operation of floss silk lattice repair in direct inguinal hernia is given.

2. While this operation is most fre-

quently employed by us in direct inguinal hernia, we also use it for those cases of oblique inguinal hernia in which the internal ring is unduly stretched and the floor of the canal is considerably weakened.

3. It is in our opinion the operation of choice for cases of recurrent inguinal hernia.

4. Septic complications in the wound occur in about 2–3 per cent of the cases, this being due to faulty technic. If a surgeon gets a high incidence of sepsis by using this suture material, it would be advisable for him to resort to other types of operation or of suture material and at the same time to revise the details of his technic.

5. The results in a consecutive series of over five hundred cases have been so uniformly satisfactory that we do not hesitate to employ this method for all the difficult and complicated types of inguinal hernia.

RÉSUMÉ

1. L'auteur nous donne en détail la technique de l'opération pour la cure de hernie inguinale directe, à l'aide de la bourre de soie (floche, filocelle).

2. Quoique cette opération est le plus fréquemment employée pour les hernies inguinales directes, elle est aussi employée dans les cas de hernies inguinales obliques dans lesquels l'orifice interne est démesurément dilaté et le plancher du canal inguinal très affaiblie.

3. Nous sommes d'avis que cette opération est l'opération de choix dans les cas d'hernies inguinales récidivantes.

4. Les infections de la plaie surviennent dans deux tiers des cas. Cela est due à une technique fautive. Si un opérateur a une haute incidence d'infection avec cette méthode, il doit l'abandonner ou perfectionner sa technique.

5. Les résultats obtenus dans cinq cents cas consécutifs furent uniformement satisfaisants. L'auteur préconise l'emploi de cette méthode dans toutes les hernies inguinales d'un type difficile et compliqué.

SUMARIO

1. El autor da cuenta detallada de la técnica de la operación de hernia directa inguinal, por medio de la sutura de seda-floja enrejada.

2. Aún cuando esta operación es empleada con más frecuencia por el autor en la hernia directa inguinal también la práctica en casos de la hernia oblicua inguinal, cuando el amillo-interno es muy abierto y el piso del canal esta muy débil.

3. En nuestra opinión ésta es la operación de selección en casos de hernia inguinal recurrente.

4. Complicaciones sépticas de la herida ocurren en 2–3 por ciento de los casos, debido a errores de técnica. Si un cirujano en su experiencia obtiene alta incidencia de infección con el uso de este material de suturas, se recomienda que escoja otro método de operación o de material de sutura y al mismo tiempa revisar, en detalle, su técnica.

5. Los resultados uniformemente obtenidos por el autor en más de 500 casos consecutivos de hernia, justifican sin duda el empleo de este método en todos los casos difíciles y en complicados tipos de hernia.

Выводы

1. Дано детальное описание оперативной техники починки прямой паховой грыжи при помощи сетки сплетенной из шелковаго сырца.

2. Хотя эта операция употребляется нами, большей частью, при прямой грыже, мы ее применяем также в тех случаях косвенной паховой грыжи, в кото-

рых внутреннее кольцо канала очень растянуто и пол канала очень ослаблен.

3. По нашему мнению это предпочтительная операция в случаях повторной паховой грыжи.

4. В 2—3% оказались гнойные осложнения причиненные плохой оперативной техникой. Если хирург часто встречается с гнойным осложнением при употреблении этого шовного материала, то советуется ему прибегнуть к другому типу операции или шовного материала, а также проверить во всех деталях его собственную оперативную технику.

5. Результаты, полученные в 500 последовательных случаях, были настолько удовлетворительны, что мы не колеблемся применять этот способ во всех трудных и осложненных случаях паховой грыжи.

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Dr. Harvey Cushing (1869-1939)

ON THE OCCASION OF THE FIFTH ANNIVERSARY OF HIS DEATH ON OCTOBER 7, 1944

SOLOMON R. KAGAN, M.D.

DR. HARVEY CUSHING was a pioneer in experimental physiology, pathology and surgery, particularly in the field of the pituitary body and its disorders. He also was a prominent medical educator, a leading American medical bibliophile, a distinguished medical biographer and historian, a prolific and gifted writer. His monumental work, *The Life of Sir William Osler* (1925) is one of the best medical biographies. His high medical achievements placed him in the forerank of American physicians.

Six letters written by Dr. Cushing to Col. Fielding H. Garrison of Washington, D. C., are herein reproduced for the first time. I selected them from Dr. F. H. Garrison's unpublished "Volumes of Letters," which were turned over to me by Mrs. F. H. Garrison. Dr. Cushing gave me the permission to publish them. These letters have an historical interest and reflect the personality of this great brain-surgeon and man.

I

Boston, Massachusetts
April 7th, 1913

Dear Garrison:

Some six years ago Dr. Billings came to Baltimore with the plans of the future Brigham Hospital, and I judge that even then I may have been in their minds as the possible encumbent of the surgical post, for Dr. Welch, who entertained Dr. Billings, asked me to come, at Dr. Billings' request, and look over the plans.

They were at the time, and as the hospital has gone up are still, of the old type of pavillion system —for which I have very little sympathy. Dr. Billings doubtless had the Hopkins in mind when he prepared them.

The original plans were of course continually worked over for the succeeding years, by the architects here in Boston and under the supervision of Dr. Howard, the present superintendent, who was appointed some years ago.

When it came to putting these plans over for contractors' bids the sum ran up to such an inordinate amount that Christian and I, who had in the interim been appointed the medical and surgical encumbents, insisted that the buildings, architecturally speaking, should be cut down so that we should have a little money left for running expenses. As they now stand I believe they were put up for about half the original estimate, and consequently look rather factory-like.

All this does not sound very complimentary to Dr. Billings, but the great compliment is that he was asked by the trustees to formulate the original plans, inasmuch he was considered to be, and doubtless was at the time, the authority on hospital construction. This bare fact therefore is of significance and is

(Continued on page 19)

Amputation of the Extremities and Prosthesis in the U.S.S.R.*

PROF. NIKOLAI N. PRIOROV, M.D., F.I.C.S. (Hon.)
MOSCOW, U.S.S.R.

AMPUTATION of the extremities in gunshot wounds is, in a variety of cases, the sole means of saving the life of the wounded. In comparison with previous wars the number of amputations in the present war, both in the rear and at the front, has diminished by half.

The reasons for this decrease in the number of amputations are as follows:

1. Proximity of surgical aid to the wounded.
2. First aid to the wounded in the first hours after injury.
3. Radical surgical excision of the wound in medical sanitary stations near the front and in field hospitals.
4. The use of anti-tetanus serum in all cases of trauma and the use of anti-gangrene serum in cases of severe trauma.
5. Wide use of sulfa preparations.
6. Use of blood transfusion, without exception, where indication exists.
7. The possibility of retaining patients with severe wounds of the extremities in front-line hospitals until their condition becomes less grave.
8. Complete immobilization of the injured extremities.

We consider plaster cast the best method of immobilization. The majority of amputations are performed at the front and only an insignificant number, approximately one-fifth of all amputations, are performed at hospitals at the rear.

*Presented at the Ninth National Assembly, United States Chapter of the International College of Surgeons, Philadelphia, Oct., 1944.

REASONS FOR AMPUTATIONS

The first and chief reason for amputation (up to 40 per cent) is severe destruction and crushing of the soft tissues, bones and joints, with acute disturbance to nutriment of the extremities.

The second reason is an extremity torn away when trauma is incurred, as a result of shell fragments, bombs, etc., and which remains connected to the body by only a patch of skin, thus necessitating only completion of amputation.

Third, the presence of sudden and fulminatingly developing gas infection when other methods of controlling it prove unsuccessful.

Fourth, gangrene of the extremities, after injury to the blood vessels, burns, freezing, etc. Amputations of this type are not numerous (from 1 to 2 per cent of the total).

Fifth, septic condition of the patient after trauma of the extremities, in the presence of phlegmon and purulent pockets and in acute osteomyelitis, when all methods of treatment prove unsuccessful and it becomes necessary to sacrifice the extremity to save the patient. Amputations as a result of these conditions constitute, according to our data, 7 to 9 per cent of the total. They are performed in hospitals close to the rear lines.

METHOD OF AMPUTATION

We use both the "chop" and "guillotine" methods of amputation, but greatly prefer the guillotine because sufficient skin is saved to allow for a later skin plastic operation. In individual cases we cut out one or two skin flaps which, if favorable conditions exist, can later be used to close the amputation wound. In order to protect the flap from infection it is rolled into tube form and sutures. Primary amputations are never sutured.

We consider the following safeguards obligatory in amputations:

1. Prevention of the patient's becoming chilled during the operation by providing him with heat (warm blankets, heat pads, etc.).
2. Blood transfusions prior to and following operation. In primary amputation, blood is transfused in large quantities; in secondary amputation, it is transfused in small quantities.
3. Use of a tourniquet during the operation so as not to lose a single drop of blood.
4. Operation with the patient under anesthesia. We commonly use inhalation, intravenous and local anesthesia and also freezing.
5. Observation and care in the field hospitals where the amputation was performed for a period of two or three days following operation.

TREATMENT OF THE AMPUTATION STUMP

The cause of amputation and the methods of amputation just indicated determine subsequent treatment of the stump.

An infected stump is never sutured. When the stump progresses favorably we recommend an initial dressing on the eighth or tenth day, preferably under anesthesia. In such cases we observe that the amputation site is clean and covered with fresh granulations, and that inflammation is absent.

Secondary suture, preferably with the use of plastic buttons, is possible in order to gradually approximate the edges of the wound by tightening the suture.

These measures guarantee a good stump for prosthesis and preclude the necessity of re-amputation.

When the stump progresses unfavorably in the presence of infection (phlegmon, osteomyelitis, phlebitis, etc.) the wound is treated by the usual surgical measures: supplementary excision, antiseptics (sulfa preparations, penicillin, gramicidin, bacteriophage and others) and likewise by physiotherapeutic methods. The stump wound is treated with the aid of a Thomas brace in order to prevent the development of contractures.

A significant number (up to 80 per cent) of amputation stumps are diseased or defective.

Disease of the stump includes: nonhealing wounds, ulcers, osteomyelitis, ligature fistula, exostosis, neuritis, pains in the stump, phlebitis, disorders of the skin and contractures.

Defects of the stump include: excessively long or excessively short stumps, disarticulated stumps of the knee joint, ankle joint, wrist and shoulder, stump scars with bone adhesions, conical stumps, ankylosis and defects following bone plastic operations.

It is urgent to care for diseases of the stump and to remove defects. Physiotherapy, heat procedures, mud, tar, paraffin and ozocerite are extensively used for this purpose.

Cases which are not responsive to conservative treatment are subjected to operative treatment as follows:

a. Skin plastics
b. Plastic of local tissue

c. Excision of scar tissue with skin plastic
d. Removal of adhesions and removal of ligatures
e. Removal of neuromas and neurolysis
f. Sequestrectomy
g. Re-amputation

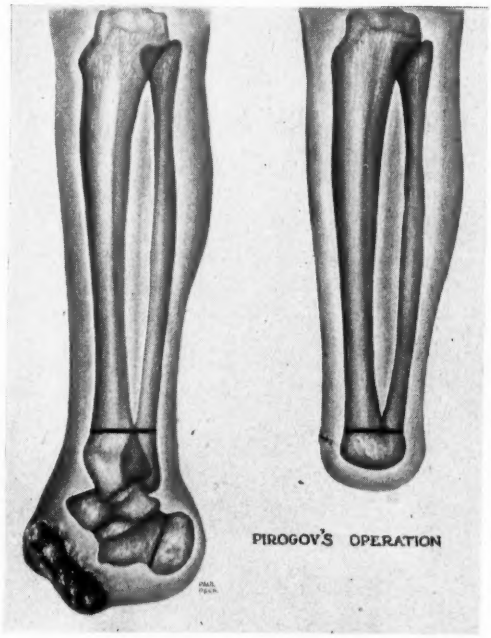

Fig. 1. Pirogov's operation.

Re-amputations constitute 40 to 60 per cent of all operations on the amputation stump and require special attention. The following questions arise with regard to re-amputation:

1. Indications for re-amputations
2. Time of re-amputation
3. Method of re-amputation

According to data compiled during the war by Soviet hospitals, indications for re-amputations have occurred in the following proportions: nonhealing wounds (up to 60 per cent), osteomyelitis (from 17 to 20 per cent), extensive scars with bone adhesions (10 per cent), exostosis, pains, etc. (10 per cent).

The time of re-amputation cannot be a matter of indifference. On the basis of

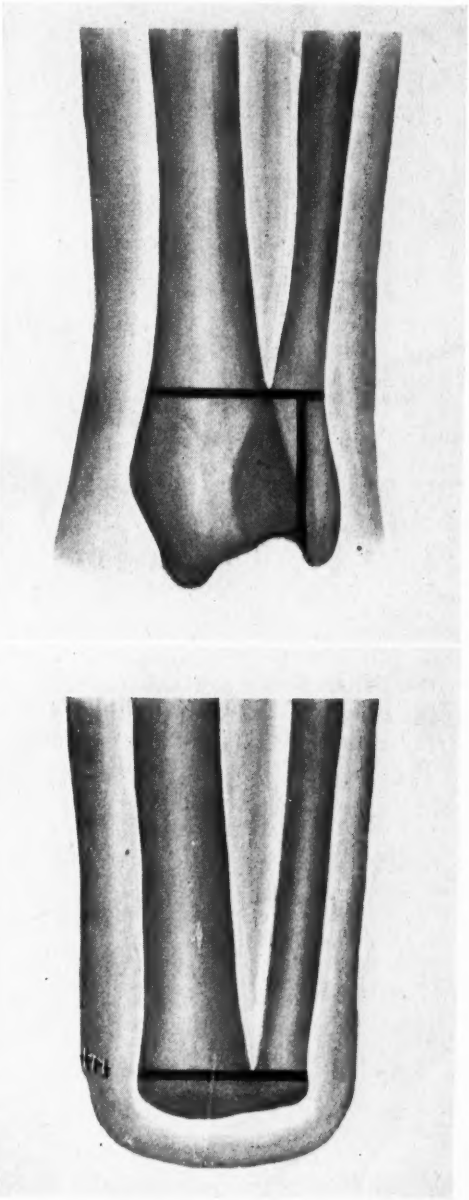

Fig. 2. Levy's operation.

wide experiences we have reached the conclusion that the ideal time is the third month following primary amputation,

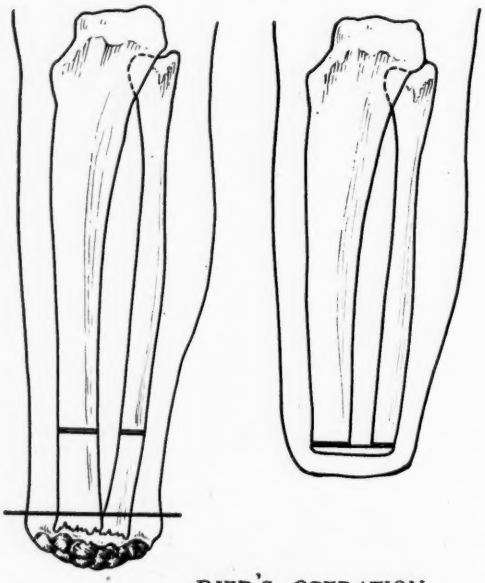

Fig. 3. Bier's operation.

when good granulation exists, inflammation and edema have disappeared, and when dense scars are not present. In cases of gas infection re-amputation is delayed until the sixth and tenth month.

The bone, in re-amputation, is cared for by the Bunge method. The bone canal is tamponed with a section of muscle, bleeding vessels are carefully tied, the nerve is cut at a fairly high level with a sharp blade and drainage tubes are inserted for one day.

The use of the bone plastic operations of Pirogov, Biers, Gritti-Stokes, Lew and Kirschner (Figs. 1–5) is widely recommended.

PREPARATION OF THE STUMP FOR PROSTHESIS

Exceptional attention is given to preparing the stump for prosthesis.

It is necessary to give consideration to making a good stump and one suitable for prosthesis from the very onset of treatment. In the first stage of stump treatment the appearance of binding scars, contractures and limitation of motion must be prevented. Physiotherapeutic methods of treatment are used in the second stage, after the wound has healed, and include massage of the ex-

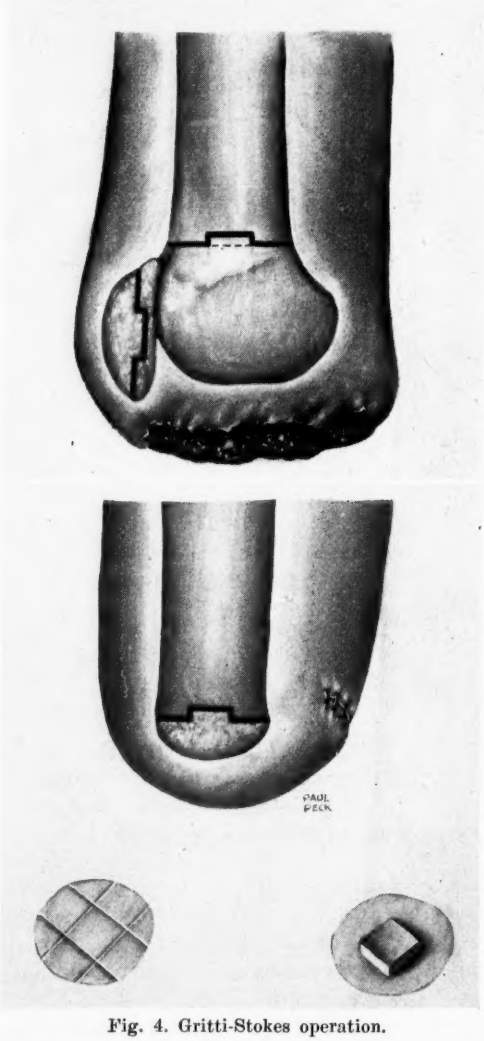

Fig. 4. Gritti-Stokes operation.

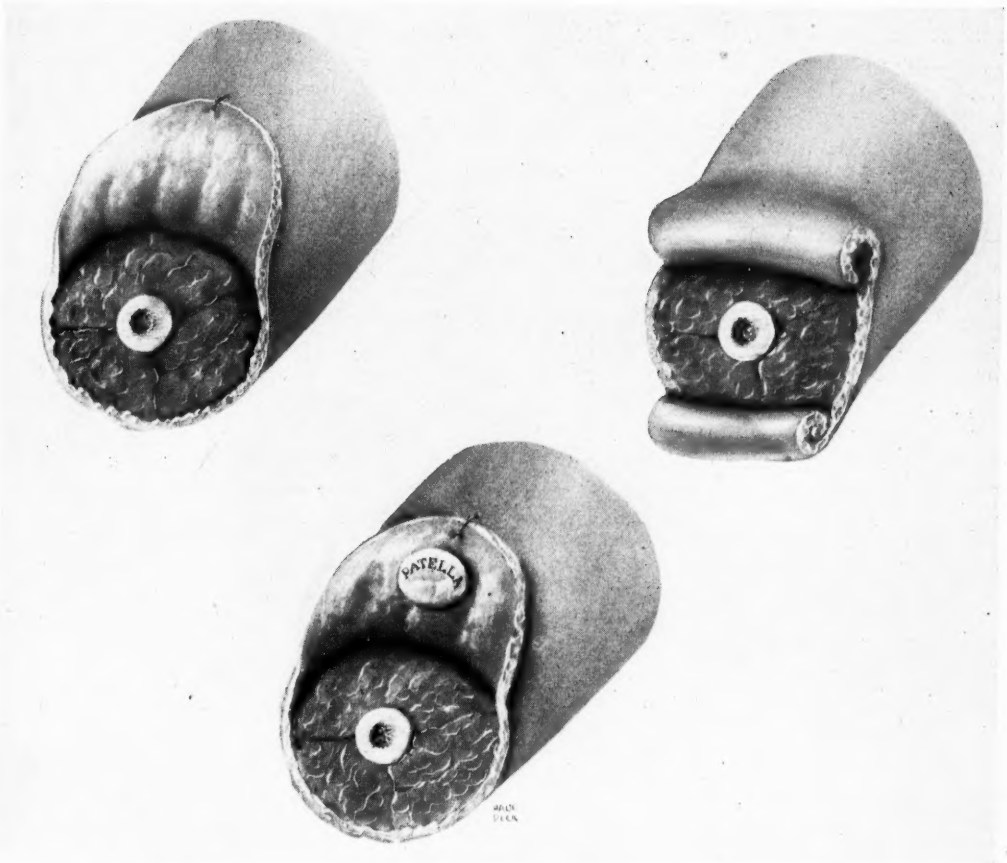

Fig. 5. Kirschner's operation.

tremities, omitting the stump itself, contrast baths and electric stimulation. Stump exercises and gymnastics for the amputee, stump wrapping and training that accustoms the stump to withstand pressure are initiated early. Therapeutic prostheses are extensively used. The period of stump preparation continues for two to three months.

ORGANIZATION OF PROSTHESIS SUPPLY

In the Soviet Union a network of special hospitals has been established for the purpose of supplying prostheses for amputees. Each hospital includes a department of orthopedics where the stump is treated, a department of physiotherapy where it is prepared for prosthesis, and a department of prosthesis where the artificial limbs are completed and fitted.

Our prostheses are made of wood, leather or emolyten. Our system of supplying limbs is divided into two types of operations: (1) manufacture of parts; and (2) assembly of the finished limb. Several factories exist for the manufacture of unassembled metal and wooden limbs. Assembly of the prostheses is handled by regional shops distributed throughout the Soviet Union.

Special attention is given to supplying prostheses for wounded men with bilat-

eral arm amputations. Either a Krukenberg operation or phalangization is performed and the amputee is provided with an active artificial hand.

Healing the amputation stump and supplying a suitable prosthesis is the requisite for reëstablishing the patient's working capacity and providing him with employment. Up to 90 per cent of our amputees, after being treated and supplied with artificial limbs, return to the factories, plants and other establishments where they worked prior to the war.

Only labor can complete their rehabilitation. Only labor can heal their severe psychic wounds and restore their shaken nerves.

SUMMARY

The number of amputees in the present war has been reduced by one-half in the Soviet Union, and approximately 90 per cent of these are rehabilitated. The guillotine method of amputation is recommended. Subsequent treatment of the stump is determined by cause and method of amputation. An infected stump is never sutured. Initial dressing is applied on the eighth or tenth day. Diseases of the stump are treated by physiotherapy, heat procedures, mud, tar, paraffin and ozocerite. About 40 to 60 per cent of the cases require reamputation. Bone plastic operations of Pirogov, Biers, Grittistokes and Kirschner are recommended. Healing the amputation stump and supplying proper prosthesis is a prerequisite of rehabilitation. Prostheses in use in the Soviet Union are made of wood, leather or emolyten.

RÉSUMÉ

Dans l'Union Soviétique le nombre des amputés de cette guerre a été réduit de moitié et à peu près 90 pour cent de ceux-ci ont été réhabilités. La méthode d'amputation par guillotine est préconisée. Le traitement postopératoire est déterminée par la cause et la méthode d'amputation employée. Un moignon infecté n'est jamais suturé. Les maladies du moignon sont traitées par la physiothérapie, la chaleur, la boue, le goudron, la paraffine et l'ozokerite. Dans 40 à 50 pour cent des cas une réamputation est indiquée. Les opérations plastiques des os, tels que Pirogov, Biers, Gritti-Stokes et Kirschner sont recommandés. Il faut que la plaie soit guérie avant l'emploi de prothèse. Dans l'Union Soviétique les prothèses sont faites de bois, de cuirs ou d'emolyten.

SUMARIO

El número de los amputados en la guerra actual han sido reducidos un 50 por ciento en la Union Soviet y más o menos 90 por ciento de éstos son rehabilitados. Se recomiendo el método de guillotina para la amputación. El tratamiento del muñón se determina según la causa y el método de amputación. Un muñón infectado nunca se sutura. La cura inicial se hace en octavo o decimo día, el tratamiento de muñón consiste en la aplicación de la fisioterapéutica, calor, fomentaciones, fango, brea, parafina y otros medicamentos.

De 40 a 60 por ciento de estos casos necesitan reamputación. Las operaciones plásticas de Pirogov, Biers, Gritti-Stokes y Kirschner son recomendadas. La curación de los muñones y la applicación de protesis adecuada, son esencial requisitos para obtener rehabilitación. La prótesis en uso en la Union Soviet son construídas de madera, cuero y otros substitutos.

Выводы

В Советском Союзе количество ампутированных в настоящей войне было уменьшено на половину. Приблизительно 90% были реабилитированы. Предпочитается гильотинный метод ампутации.

Последующее лечение обрубка определяется причиной и методом ампутации. Зараженный обрубок никогда не зашивается. Первая перевязка накладывается на восьмой или десятый день. Заболевание обрубка лечится физикотерапией, теплотой, грязью, смолой, парафином и озоцеритом. 40%-60% должны быть ре-ампутированны. В случаях требующих пластику кости рекомендуются операции Пирогова, Биерса, Тритти-Стокса и Киршнера. Полное выздоровление обрубка и снабжение хорошим протезом необходимо для реабилитации. Протезы употребляемые в Советском Союзе делаются из дерева, кожи и эмолитена.

DR. HARVEY CUSHING (1869–1939)

(Continued from page 12)

of some historical interest. If you wish any further details I will ask Mr. Cochran, the president of the Board of Trustees, to let me have them.

Very sincerely yours,
HARVEY CUSHING

II

Boston, Mass.
May 5, 1914

Dear Garrison:

I have read the manuscript with deepest interest and think it will be a great pity if you do not publish it somewhere, for it contains just the sort of information that I have long been after myself and this means many others. I have taken the liberty of making a few excerpts from it, which I shall be glad to use in a second edition of my pituitary volume should I ever get down to working at the thing again. I was particularly glad to learn about Bordeu, who threads his way through your pages so interestingly.

As for my own things I think you have rather overdone it, and I have scratched one of the paragraphs where credit was given which we hardly deserve. We were the first to show that experimental pituitary insufficiency led to constitutional symptoms comparable to those which Fröhlich was among the first to call attention to in clinical cases, and up to this time there had been little idea that they were due to a lowered glandular function. This of course has done much to accelerate our subsequent studies. In his report a few years ago Aschner (Vienna) did not quite give us, I think, the credit that was our due. However, these questions of priority bother me very little, and, as I have said, I think you have thrown more bouquets in our direction than are really deserved.

Do by all means have the paper published, wherever it is that you proposed to publish it; you do not say in your letter. And be sure and send me a reprint. How in thunder you ever managed to piece the thing together and to carry what you have in mind, particularly all these sympathicotonic and vagotonic matters, is beyond my comprehension.

Ever sincerely yours,
H. C.

III

Boston, October 23, 1916

Dear Garrison:

What do you think of the Münsterberg-Hocking correspondence, which has caused a ripple here that may possibly not have reached Washington? Mrs. Cushing has just finished H. G. Wells's book and recommends it highly to me. She is very cautious about this, for I rarely get time to read novels, so that I presume it is unusually good, and I venture to hand the recommendation on to you. I am amused at Colonel McCaw's remarks on Henry James's novels. I have a little of this same feeling myself, though I have just been buying up a lot of the old and unaltered first editions for my wife, who is addicted to them. The knowledge of this may make you hesitate regarding the reading of H. G. Wells. However, I pass it on for what it is worth.

Ever affectionately yours,
HARVEY CUSHING

IV

Nov. 28, 1928

Dear Fielding:

I am glad to learn from you something about the Welch Library; and word has reached me from some round-about source that they were lucky enough to get you to be their consultant or perhaps something even more than that, which delights me hugely. I hope this doesn't merely mean that you have acquiesced in carrying a double load. If they know their business, they'll give you a handsome salary and get you over there to spend your days in quiet and enjoyable scholarship, free from the details that have been piled on you all these years in Washington. Popsy's proposal that I should some day come down and take his place, I have always regarded as a huge joke, largely based on the fact that he and I have the same birthday. But then, after thirty years and more in surgery, I am much older than he is. Still, it was a pleasant and friendly gesture on his part which I never took very seriously.

I wish I might know what Popsy has been doing with himself these eighteen months. He must have had a delightful time browsing around Europe, and though I have written to him once or twice I have received the usual answer—no answer.

Always affectionately yours,
HARVEY CUSHING

V

Boston, Mass., May 18, 1931

Dear Fielding:

Your note of May 14th lies before me with the reprints which I had of course seen in the *Bulletin* of the Academy. I always read everything you write, from books to book reviews, with a great thrill and hope you will continue to send me reprints of these scattered things, for I always put them in the books to which they pertain.

And now you seem to have another big task on hand for the World's Fair.

I wish I know what outstanding achievements from

(Continued on page 52)

The Preoperative and Postoperative Treatment of Cancer of the Rectum and Pelvic Colon*

HARRY E. BACON, M.D., F.A.C.S.,** W. D. TODHUNTER, M.D.,***
O. C. GASS, M.D.,**** AND F. D. WOLFE, M.D.

PHILADELPHIA, PENNSYLVANIA

PHYSICIANS here and abroad have become increasingly conscious of the curability of malignancy of the bowel by radical operative excision and the futility of radium, roentgen therapy and other local destructive methods against this disease. Too, it has been realized that resections of the sigmoid and rectum in stages ordinarily do not lessen, but rather multiply, the complications and sequelae which beset the patient. The prolonged period of hospitalization, the secondary manipulation of tissues, often contaminated or necrotic from the first stage procedure, may add to both the mortality and morbidity.

During the past decade, there have been conspicuous changes in pre- and postoperative management of patients with intestinal cancer. While a series of 712 resections without the establishment of an abdominal colostomy has been performed, as recently reported by Babcock and one of us (H. E. B.),[16, 19] this particular discussion is based on a group of 256 cases of cancer involving the anus, rectum and pelvic colon from the Department of Proctology of Temple University for the three-year seven-month period ending April, 1944. Of the 256 cases, 27 were located in the sigmoid, 87 rectosigmoid, 132 rectum and 10 anus. Resection was carried out in 208; an operability or resectability of 81.2 per cent. There were 16 deaths—a mortality of 7.6 per cent. In 145, a Babcock proctosigmoidectomy [17] was performed with 8 deaths—a mortality of 5.5 per cent; there were 49 consecutive resections with 1 death—a mortality of 2.04 per cent.

PREOPERATIVE PREPARATION

As is our custom, all patients are admitted to the hospital five to seven days prior to operation. A complete examination, including cystometric studies, is made and the patient placed in fluid, caloric, nitrogen and electrolyte balance. Fluids are encouraged freely by mouth, a minimum of 2500 to 3500 cc. daily unless contraindicated. One or more blood transfusions are administered in quantities sufficient to raise the erythrocyte count to four and one-half million. Plasma protein determinations were made on 74 consecutive patients upon admission, 22 of whom (or 29.7 per cent) showed hypoproteinemia; levels of 6.5 Gm. per 100 cc. or above were considered normal. Since approximately 30 per cent of patients with rectal and sigmoidal cancer show hypoproteinemia during the preoperative period, the nitrogen equilibrium is established and maintained by means of a low residue diet divided into four feedings per day consisting of carbohydrate 400 Gm., pro-

* Presented at the Ninth National Assembly of the International College of Surgeons held in Philadelphia, Pa., Oct. 3–5, 1944.

** Professor and Head of the Department of Proctology, Temple University School of Medicine. Diplomate of the American Board of Surgery.

*** Resident in Proctology.

**** Assistant in Proctology.

tein 120 Gm., fat 50 Gm., and amino acids (casein hydrolysate reinforced with tryptophane *) 300 to 400 cc., (20 per cent solution) orally each day.

No. Grams		*Calories*	
400 Carbohydrate	x 4	1600	yields 341 Gm. water
120 Protein	x 4	480	
50 Fat	x 9	450	
		2530	
300 cc. Amino Acids, 20%		240	
	Total	2770	

Transfusion Reaction. Many hypotheses have been promulgated concerning the pathogenesis of hemolytic transfusion reactions, such as ischemia of the kidneys from vasoconstriction,[73] blockage of the renal tubules by precipitation of the pigment,[22, 39, 40, 38, 93] nephrotoxic substances released from hemolysis [63] and anaphylaxis,[70] yet there is no therapeutic procedure which has proved uniformly successful. Our routine practice has been to maintain an adequate fluid intake and blood volume, and to alkalinize the urine in an effort to avoid agglutination and hemolysis of the donor's cells by the recipient's plasma. Sodium bicarbonate sufficient to maintain a urinary pH above 7.0 is given. Ordinarily, 2 Gm. (30 grains) three hours prior to transfusion and 1 Gm. (15 grains) every hour for three doses is prescribed. If intravenous administration is desired, we employ 5 per cent sodium bicarbonate or in preference a 1/6 molar sodium lactate solution.

Vitamin Therapy. A high incidence of subclinical avitaminosis, previously unsuspected but a potentially dangerous state, may occur as a result of diet, inability to utilize vitamins, failure of absorption of fat soluble vitamins in the absence of bile or depletion of vitamin reserve by excessive demands in malignancy. Routinely, by mouth, thiamin chloride 50 mg., nicotinamide 100 mg., ascorbic acid 100 mg., and pyridoxine 5 mg. are prescribed daily.

Non-Absorbable Sulfonamide Therapy. On the fifth preoperative day, a nonabsorbable sulfonamide is begun by mouth and continued to the morning of operation. Sulfasuxidine, succinylsulfathiazole, which we have employed in 131 cases (102 proctosigmoidectomies) of our total series, is given in an initial dose of 0.5 Gm. per kilogram body weight, followed by a dosage of 0.25 Gm. per kilogram every four hours daily. More recently, sulfathalidine, phthalylsulfathiazole,* a sulfonamide having a similar mode of action, but possibly exerting a more potent antibacterial activity has been studied in 54 cases including 19 proctosigmoidectomies. The initial dose is calculated on the basis of 0.1 Gm. per kilogram weight; the maintenance dose is estimated upon the same basis, the total daily amount being given every four hours in equally divided portions. Stools are collected and sent to the laboratory for quantitative estimation of coliform organisms. Low prothrombin levels may, at times, be raised by injection of vitamin K or synkayvite. Castor oil, 40 cc., is given on the evening of the second preoperative day. The following day (first preoperative), the patient receives glucose in water every hour and amino acids to total 2000 calories. On the morning of the operation, the rectum is irrigated until clear and residuum aspirated; amino acids and glucose solution are given orally. Synkayvite, 10 mg., is given three hours

* Supplied through the courtesy of F. D. Stearns & Co.

* Supplied through courtesy of Sharp & Dohme Company.

before operation. One-thousand cubic centimeters of 10 per cent glucose in physiologic saline are administered intravenously and continued during the operation with 500 cc. of whole blood. An indwelling (Foley) catheter is inserted into the bladder.

CARE DURING OPERATION

Our choice of anesthesia is fractional or continuous spinal, using 0.3 per cent pontocaine in 7 per cent dextrose solution. All patients submitted to radical extirpation routinely receive 500 cc. of whole blood during the operation, and if such is not obtainable, plasma is substituted. As can be appreciated, the circumstance of a suddenly depleted blood volume calls for immediate replenishment, and the quickest and best means to increase blood volume is by direct infusion of blood.

More than a decade ago, Coller and Maddock [34] pointed out that the water loss during an abdominal operation and the four hours immediately following may amount to as much as 1000 cc. Recently, Coller [32] and Pack [83] with their respective co-workers modified the original technic of Gatch and Little [49] to estimate the blood loss during surgical operations. In the performance of their abdominoperineal resections for rectal cancer, a blood loss ranging from 183 cc. to 900 cc., or an average of 410 cc. and 455 cc. respectively, was noted. Duodenal suction applied to an indwelling Levine tube is in force during the operation to avoid vomiting and regurgitation of vomitus into the lungs, which according to Wangensteen [100] is the most frequent cause of postoperative pneumonia. Suction is continued for a period of seventy-two hours or more following operation to prevent intestinal distention.

POSTOPERATIVE TREATMENT

Inhalation of high concentrations of oxygen is given for a minimum of twenty-four hours for the purpose of effecting a reduction in the amount of nitrogen, thereby diminishing intestinal distention.[45, 46] Oxygen also is of value to maintain capillary tone and tissue viability. The transfusion of whole blood given during the operation is followed by 5 per cent glucose in isotonic saline solution; additional whole blood and/or plasma is ordered as needed.

Status of Hydration. The patient's status as to hydration and acid-base balance is of utmost importance, for one should be ever mindful that the loss of fluid beyond that which is essential to insure healthy body economy is consistent with a deranged physiologic function. The degree of thirst, dryness of the skin and capillary turgor are helpful indices in the determination of the state of hydration, but there are other factors which are more reliable, such as the urinary output. For normal kidneys to concentrate urine to a specific gravity of 1.030 and excrete a minimum standard of 35 Gm. of waste material, 500 cc. of urine are required daily.[80] Severely damaged kidneys, on the other hand, with low concentrating capacity, require 1500 cc. of urine to excrete the same amount of solids. Maddock and Coller [72] estimate this to be the minimum daily urinary output in all ranges of function. Loss by vaporization from skin and lungs, computed as 1000 to 1500 cc. in ordinary surgical cases and 2000 cc. in the presence of an increased demand on the heat dissipating mechanism,[35] such as fever or hot weather, is also to be considered. Of value is the comparison with the preoperative fluid balance and blood studies: the plasma protein, specific gravity of blood plasma and whole

blood, the cell volume of venous blood by means of the hematocrit and when practical, the daily weight [101] of the patient. By the foregoing, shock due to hemorrhage may be differentiated from that of circulatory collapse, dehydration in the presence of anemia, fluid and protein loss and the onset of edema levels determined.[41] Recently, we have employed the McClure-Aldrich test,[74] which consists of measurement of the disappearance time of an artificially injected wheal of normal saline solution, the efficiency of which, according to Appel and Brill [4] as well as Hopps and Christopher,[57] has been proved by the investigations of Kunde.[65] The test represents a means of estimating tissue avidity for water. In forty-two consecutive resections, we have found it a fairly reliable index to the state of hydration, provided the electrolyte equilibrium is considered.

Acid-base Balance. Sodium chloride metabolism, which cannot be divorced from water balance, should be understood, inasmuch as surgical procedures on the large bowel are frequently attended by abnormal losses of this important electrolyte. Under normal conditions, the electrolyte concentration of the intracellular and extracellular body fluids is maintained at a relatively constant level, and while loss of electrolyte with a parallel loss of water from the extracellular compartment does not produce changes in electrolyte concentration, marked depletion in the extracellular reservoir of base and water results in a fall in total base concentration in the plasma. In patients with abnormal loss of fluid containing electrolytes, the relative proportion of acid and basic constituents should be known as well as the total base concentration, otherwise acidosis or alkalosis in addition to dehydration may ensue. Determination of the total serum carbon dioxide content and serum chlorides, from which the total base concentration may be approximated; the plasma protein, hematocrit, the daily urinary chloride concentration; loss by perspiration, computed by Coller and Maddock [35] as 3 Gm. per liter, loss by duodenal suction and by the Babcock intra-abdominal sump drain,[9, 10, 15] will assist in ascertaining the patient's electrolyte status. For the restoration and maintenance of physiologic concentrations and amounts of basic ions, acid ions and water, Elkington [43] suggested that three-quarters of the total base requirements be given as isotonic sodium chloride and the remainder as sodium lactate or sodium bicarbonate. As will be recalled, approximately 90 per cent of the base in the extracellular fluid is sodium and all calculations and base replacements may be referred to the sodium ion. In a recent contribution, Coller [37] advises that because of the relatively high incidence of "salt intolerance," especially after general anesthesia, no isotonic saline or Ringer's solution should be given the day of operation, on the first or second postoperative day; that if significant loss of extracellular fluids occurs during this period, it be replaced with 0.5 per cent sodium chloride solution with 5 per cent glucose; and that great care be exercised in the administration of isotonic saline and Ringer's solution to patients who are hypoproteinemic, anemic, acidotic and oliguric.

Nitrogen Equilibrium. Nitrogen balance and the level of the blood protein has but recently been recognized as an important part of the pre- and postoperative care of the patient, although Lauter [68] nearly two decades ago showed experimentally that in malignancy there is an increased protein requirement.

There is evidence at hand [91] that food given orally is more effective than that given intravenously and that adequate amounts of protein and carbohydrate are necessary to maintain normal glycogen stores in the liver. Yet there are a few days immediately following proctosigmoidectomy when parenteral administration must of necessity be employed if nitrogen equilibrium is to be maintained.

Rhoads [92] in addressing the American Proctologic Society a few years ago stated, "Every time a patient is subjected to a serious operative procedure, the patient not only loses nitrogen, but does not make it very well. As a result, if operation is begun on a patient already hypoproteinemic, his serum protein may continue to drop to a very dangerous level and complicate seriously his ability to survive the operation." Others concur in that the hypoproteinemia in cancer of the gastro-intestinal tract is aggravated by major surgical procedures.[7, 29, 76]

It is evident, therefore, that the osmotic effect of plasma proteins in the maintenance of fluid balance must be considered. Normally, blood proteins exert an osmotic pressure of 30 mm. of mercury. If loss of plasma protein occurs, following radical extirpations, such as proctosigmoidectomy, the systemic effect is a reduction in blood volume. As a result, the venous return is lessened, the cardiac output reduced, thereby producing a fall in blood pressure. Thus, a disturbance ensues in the relationship between the vascular bed and interstitial fluid. Unless treatment is instituted, the blood proteins become so depleted as to produce insufficient colloid osmotic pressure to maintain serum water for blood dilution.

There have been advanced several theories based on sound investigative work as to the cause of low serum protein levels in patients with cancer of the gastro-intestinal tract, among which may be mentioned: depletion of protein stores due to deficient diet,[6] continual or intermittent bleeding,[1] impairment of functional capacity of the liver,[2] causing limitation of plasma protein fabrication,[71] inability to properly absorb the amino acids necessary for protein synthesis,[1] and destruction of proteins in large amounts. Mayer and Kozoll [76] observed that 29.3 per cent of patients with gastro-intestinal cancer had average protein volumes below 6.0 Gm. per 100 cc. and following surgery, the protein deficits were considerably in excess in the cases of colonic cancer. In 65 consecutive resections for cancer of the colon and rectum, Binkley [27] found that 56 of the 65 patients (86 per cent) became hypoproteinemic (levels below 6.5 Gm. per 100 cc.). In our series, 17 resected patients in whom no treatment was instituted were taken as a control: 15 (or 88.2 per cent) became hypoproteinemic (6.5 Gm. per 100 cc. or above considered normal). In contrast, however, were 57 unselected patients with cancer of the rectum or sigmoid in whom postoperative hypoproteinemia was anticipated and effort made to attain and maintain nitrogen equilibrium by the administration of blood, blood plasma and amino acids in liberal amounts—15 of the 57 patients (or 27 per cent) following abdominoperineal proctosigmoidectomy showed serum protein levels below 6.5 Gm. per 100 cc. Whole blood, which increases the plasma protein level, the erythrocytic count and hemoglobin content, is given on the first postoperative day and repeated when indicated; 500 cc. of blood being equivalent to approximately 19 Gm. of protein. In accordance with the plasma carbon dioxide combining power, a solution of sodium bicarbonate 5 per cent, Hartmann's or M/6 sodium lactate is

prescribed. Dependent upon the daily CO_2 content, the amount of sodium bicarbonate is determined by the following: Kg. wgt. $\times$ CO_2 content deficit (65 vol. %) $\times$ 0.026 = $NaHCO_3$ Gm. This is calibrated in terms of its equivalent of sodium lactate.

It is our practice following resection for cancer of the rectum or sigmoid, especially where no artificial abdominal opening is established, to give 2500 to 4000 cc. of fluid each day during the immediate postoperative period or until the patient can tolerate sufficient quantities by mouth. For example, the usual daily requirement following proctosigmoidectomy to maintain fluid, caloric, nitrogen and electrolyte balance, is not unlike the following:

Quantity		*Calories*	*NaCl*
2000 cc.	10% glucose in sterile distilled water	800	
1000 cc.	10% glucose in N/saline....with	400	9.0 Gm.
300 cc.	Amino acids.....15% sol.	180	
250 cc.	Blood..whole..aver. daily amt (9.5 Gm.)	38?	
125 cc.	Blood plasma....A.M.	74	
125 cc.	" " ....P.M.		
50 cc.	$NaHCO_3$, Hartmann's, or M/6 sod. lactate		
80 cc.	Sodium sulfathiazole 2½ Gm. A.M.		
	2½ Gm. P.M.		
3930 cc.		1492	9.0 Gm.

Route of Administration. Ordinarily the intravenous route of administration is employed but when access to veins is difficult, we do not hesitate to utilize the subcutaneous and intrasternal means of injection. In no instance have we encountered any untoward reaction with blood, blood plasma, glucose and saline or amino acids (5 per cent solution) by the intrasternal route.

Sulfonamide Therapy. The resources offered by modern chemotherapeusis are of paramount value in preventing and combatting infection, especially peritonitis, which in comparison to other causes of death still consumes a heavy toll. Sulfonamide therapy (sodium sulfathiazole, 2½ Gm. morning and afternoon) has been employed in all our resections on the rectum and pelvic colon. Providing the urinary output is 1500 cc. or above, patients are given sodium sulfathiazole 2½ Gm. in 40 cc. of distilled water intravenously morning and afternoon beginning the day following operation. The blood level is determined every second day and urine examined for erythrocytes. Should the urinary output fall between 1200 and 800 cc. daily, only 2½ Gm. are administered, while below 800 cc. the drug is omitted. Sodium bicarbonate or sodium lactate is used routinely. Where the intravenous or oral route is not feasible, 0.8 per cent sulfanilamide in M/6 sodium racemic lactate is injected subcutaneously into the median aspect of the thighs.

In October, 1942, we initiated the use of a nonabsorbable sulfonamide in surgical extirpations on the lower bowel, and during the past year its employment has been routine. Sulfasuxidine, succinylsulfathiazole,[87] is given in suspension in the same dosage as before operation, namely 0.25 Gm. per kilogram body weight every four hours as soon as the patient is able to tolerate liquids by mouth, usually on the third or fourth postoperative day. As previously reported,[19] in our series of 145 cases in which an abdominoperineal proctosigmoidectomy was performed, there were

eight deaths, four of which were due to peritonitis. Of these, namely four, only one had been given sulfasuxidine preoperatively but not postoperatively. This patient had an adenocarcinoma grade II of the rectum and a squamous cell carcinoma grade III of the cervix. Sulfathalidine, phthalylsulfathiazole, which according to Poth,[86, 88] shows two to four times the bacteriostatic activity of succinylsulfathiazole, has been employed more recently in 54 resections (19 proctosigmoidectomies). The drug is given postoperatively in amounts equal to the preoperative dose, namely 0.1 Gm. per kilogram body weight every four hours in suspension as soon as liquids are tolerated by mouth. While this drug seems to possess definite merit, we have not as yet accumulated sufficient data to warrant specific comparisons. Stools are collected and sent to the laboratory the morning following admission before the drug is given, on the morning prior to operation and on two occasions after operation. Allowing for such factors as failure to order the drug for the desired period, administration at night when the patient is asleep, prolonged use of Wangensteen suction, etc., a definite decrease quantitatively of the coliform organisms has been noted. In no instance have we encountered any untoward reaction. It may be mentioned that of our total series of 208 resections to April, 1944, including those to September, 1944, intra-abdominal soiling occurred in 11 instances as the result of perforation at the time of resection, contamination in open anastomosis or slipping of the clamp in closed anastomosis, yet there has been no fatality .Others have commented on the reduction of postoperative complications in surgery of the large bowel.[5, 11, 26, 38, 53, 69, 89, 94]

POSTOPERATIVE COMPLICATIONS

Pulmonary Complications. Pulmonary embolism, which is one of the most dramatic catastrophies in the postoperative course, accounted for four deaths in our gross series of 208 resections (2 in 145 proctosigmoidectomies). As has been shown,[24] postoperative pulmonary embolism and venous thrombosis are more common where there is injury to, or ligation of, branches of the iliac veins, in operations of long duration and of great magnitude, in patients with malignancy and where infection is present. In our group, the four patients expired between the fifth and eighth day. In Nystrom's series,[81] the largest number of fatal cases occurred within ten days of operation, while Barker and his co-workers [25] observed that approximately one-quarter of their postoperative deaths due to pulmonary embolism occurred before the seventh day and approximately one-half before the fourteenth day. Of the four cases mentioned, there was no clinical evidence of thrombophlebitis prior to death. We inspect the lower extremities daily and insist that the patient move the limbs frequently in an effort to prevent stagnation. We have not kept patients flat in bed, as has been suggested, but rather prefer slant of the upper abdomen and thorax on the pelvis (Fowler's position), since with the abdominoperineal proctosigmoidectomy, abdominal drainage through the posterior wound is promoted. Heparin has been employed in but three non-fatal cases. According to Allen [3] heparin is helpful as a preventive measure in patients with a previous history of phlebitis, in patients who continue to have small infarcts after vein interruption and as a preliminary to dicumarol administration. While we have had no experience with dicumarol in the prevention of postoperative

venous thrombosis and pulmonary embolism, the available data at hand seems promising provided its administration is controlled and individualized. Procedures such as lumbar sympathetic block,[82] and especially ligation of the vein above the thrombus[47, 56, 64, 98, 99] appear to possess merit. Inasmuch as the majority of pulmonary emboli have their origin in the deep veins of the lower extremity, it is plausible to assume that great strides may be anticipated from directive treatment.

Postoperative bronchopneumonia is extremely uncommon; two fatal cases having occurred in our gross series of 208 cases (one in 145 proctosigmoidectomies). We attribute this largely to the choice of anesthesia, Wangensteen suction during and after operation, frequent change of position immediately following and slanting of the thorax (semi-Fowler) the next morning, encouragement of deep breathing and frequent brisk slapping of the chest. Inhalations of 7 per cent carbon dioxide in 93 per cent oxygen have proved beneficial. Pulmonary atelectasis was observed in five instances of our total series. Bronchoscopic suction was employed in two instances; one patient required aspiration.

Malignant Invasion of Structures. In the series of 145 proctosigmoidectomies, malignant invasion of genito-urinary structures was found as follows: bladder in five instances, with partial resection in four; ureter in one, resected; uterus in two, hysterectomy in both; vagina in six, posterior wall resected in all; prostate in six, partial or complete resection in all. All were performed without a fatality. Shortly after admission, each patient is subjected to *cystoscopy* to ascertain if invasion of the bladder has occurred and to *cystometry* to determine if vesical dysfunction exists. The urine is cultured routinely. A Foley catheter is inserted into the bladder the morning of operation. The catheter is permitted to drain during the operation and after the patient is returned to the room, it is attached to a bottle beside the bed. The contents of the bottle are measured accurately at seven o'clock morning and evening. Twice daily, the bladder is irrigated with a warm solution of boric acid. Cystometry is repeated on the fourth postoperative day to determine the functional ability of the bladder. The catheter is removed on the fifth day; cystometric reading is made prior to discharge. The urine is collected for culture at the time of cystometry.

Urologic Complications. Urologic complications frequently provoke annoyance both to the patient and the attending surgeon. One of these is disturbance of the normal physiology of the bladder. There is little doubt that several factors influence the retention of urine following radical extirpation of the rectum, such as its close proximity to the bladder region, the character and severity of the surgical maneuver itself, the type, duration and depth of anesthesia, injury to the innervation, loss of structural support to the bladder and apprehensiveness of the patient.

The effect of spinal anesthesia on vesical function has been thoroughly discussed.[8, 23, 37, 48, 51, 58, 79, 85, 95, 97] As previously reported [20, 21] in a series of 1698 cases in which spinal analgesia was employed for low anorectal pathology, such as hemorrhoids, fistula, etc., complete data was available in 1126. Of this number, 81 patients (or 7.1 per cent) had urinary retention. The incidence following proctosigmoidectomy under fractional anesthesia, while greater, is not proportionately so when one considers the magnitude of the operation. By the same token, resections upon the

upper and mid-sigmoid rarely manifest urinary retention compared to operations for low anorectal pathology.

It is our belief that to a large measure, the functional changes result from trauma to the parasympathetic fibers, although innervating elements, namely the pudendal and sympathetic may effect the clinical picture. In our experience, even with the utmost precision in the dissection of the posterior fascial planes, it is not difficult to injure the nerves and their connecting filaments. McCrea,[75] Hill[55] and others[62, 78] place considerable import on nerve injury as a factor, although Coller and Eastman[33, 36] are quite emphatic that neither the autonomic nor the somatic nerve supply is destroyed. In the classical Miles abdominoperineal resection, destruction of the pelvic floor and division of the structures adjacent permits sagging of the bladder into the large empty perineal wound and varying degrees of angulation on the vesical neck. The same is true with proctosigmoidectomy except that the presence of the sigmoid, previously occupied by the rectum, affords support, and with reëstablishment of an antero-lateral pelvic floor, approach of the bladder to its near-normal position and relationship is attained. In our series of cases, neurogenic vesical dysfunction was observed in 17 cases. It should be mentioned that we consider a hypotonic neurogenic bladder to represent one in which reintroduction of the catheter is indicated following removal of the catheter on the fifth postoperative day, because of inability to void and loss or absence of motor activity as evidenced by cystometric readings. The duration of urinary retention in this group of 17 cases was from a few days to several weeks; one required continuous catheterization for three months. No permanent functional disability was noted, as all cases returned to normal.

Various drugs and procedures have been advocated from potassium acetate[60] and prostigmin to serve as a parasympathetic stimulant and instillations of mercurochrome into the bladder,[102] to presacral nerve[30] and transurethral resection.[44] A few years ago, approximately one hundred patients were treated by instillation of 30 cc. of 0.5 per cent mercurochrome upon completion of the operation (hemorrhoids, fistula, etc.) but the results obtained were not particularly impressive and the experiment was discontinued. It has not been employed in any of our cancer cases, although some[54, 96] are most enthusiastic concerning its use. In our hands, syntropan, a sympathetic stimulant has proved valuable. McCrea[74] has advised 200 mg. three times daily. On the basis of the number of pus cells per high power field, there were 21 cases of urinary infection.

While not available at the moment, we are in the process of compiling the results of urine culture which will be reported in the near future. Of interest is a recent article by Milwidsky,[77] who found a high incidence of urinary infection following simple colostomy. Of the nonfatal complications, there were four instances of uremia, three of sulfonamide oliguria and in one, compression of the left ureter by scar tissue.

Abdominal wound infection and dehiscence has been an infrequent complication, and, to a great measure, we feel that it has been due to the maintenance of an adequate protein and vitamin C levels and to the use of oblique muscle-splitting incision and Babcock's alloy steel wire. Others have commented favorably on the latter.[12, 13, 14, 18, 42, 50, 52, 59, 61, 66, 84, 90, 104]

Time of Discharge. Patients follow-

ing proctosigmoidectomy are permitted out of bed usually on the ninth to tenth day and recently the majority have been discharged from the hospital on the twelfth postoperative day. Approximation of the posterior sphincter musculature is made before the patient leaves the hospital but if there is purulent drainage from the presacral area, the sphincteroplasty is postponed for a month. This requires not more than three days hospitalization.

It is worthy of mention that the presacral wound consumes about three weeks for complete healing and closure —approximately that of an ordinary anorectal fistula. Thus, the majority of our recent cases have been able to return to their former or perhaps lighter occupations in an average of six to ten weeks following operation. In our other types of abdominoperineal extirpations, where a large perineal wound is made, at least three months was the average period required for healing.

SUMMARY AND CONCLUSION

From a gross series of 712 [16] cases in which radical resection was performed without colostomy, a group of 208 personal extirpations of the rectum and sigmoid for carcinoma has been selected as the basis for this discussion.

As previously reported,[19] the Babcock abdominoperineal technic of proctosigmoidectomy, without colostomy and with preservation of the sphincter muscle, possesses definite merit. It permits radical removal of the malignant bowel and gland-bearing areas, and in spite of a high rate of resectability (81.2 per cent), enjoys a low operative mortality, 5.5 per cent in 155 resections; 2.04 per cent in 49 consecutive resections. It allows early discharge of the patient from the hospital, reduces the period of wound healing and affords early return to work. As will be shown,[103] preservation of the sphincter musculature (the muscle need be sacrificed in less than 20 per cent of all cases) does not compromise the radicability of the operation.

The physiologic derangement of patients with rectal cancer in whom extirpation is contemplated is deserving of careful consideration and therefore special attention should be directed toward the maintenance of the fluid, caloric and nitrogen and acid-base balance. Varying degrees of hypoproteinemia were found in 29.7 per cent of the patients on admission to the hospital. Following resection, 88 per cent of the patients showed hypoproteinemia where no treatment had been given, compared to 27 per cent where whole blood, blood plasma and amino acids were given in liberal quantities. Thus, it is evident that following radical excision, hypoproteinemia is a significant finding and that in the majority of cases a positive nitrogen balance may be achieved by the administration of protein. It has been observed that a diet rich in carbohydrate and protein given in low-residue findings has in no way interfered with a clean, tranquil bowel at the time of operation; neither has the diet affected the number of coliform organisms in the stool.

The results obtained with the nonabsorbable sulfonamides, namely sulfasuxidine and sulfathalidine, have made us enthusiastic concerning their use, especially when we consider the group of eleven cases in which gross contamination of the peritoneal cavity with fecal material occurred without subsequent fatality. Either drug should be employed preoperatively for a period of not less than four days, and postoperatively in suspension form as soon as liquids can be tolerated by mouth.

A comparison of the cystometric recordings following operation with those prior to surgery has proved of special value in the determination of vesical dysfunction. Several factors should be considered in the etiology of urinary retention, one of the most important of which is destruction of or injury to the parasympathetic innervation.

It is our opinion that the individualized investigation and management of the patient before, during and after operation, has greatly reduced the complications and sequelae so common following radical extirpation for rectal cancer.

RÉSUMÉ

La technique pour la proctosigmoïdectomie sans colostomie et avec préservation du muscle sphincter fut employée avec succès dans 208 cas personnels d'extirpation du rectum et de l'anse sigmoïde pour carcinome. Cette opération permet l'enlèvement radical de l'intestin néo-plastique et des régions correspondantes des glandes lymphatiques. Malgré les hautes résections (81.2 pour cent) pratiquées, la mortalité ne dépassa pas 5.5 pour cent dans 155 résections; 2.04 pour cent dans 49 résections consécutives. Le séjour à l'hôpital est réduit, la guérison de la plaie s'effectue en moins de temps et permet au malade de reprendre son ouvrage plus tôt. Il n'est pas necéssaire de sacrifier le sphincter dans moins de 20 pour cent des cas. Il faut maintenir la balance de fluides, de calories, de nitrogene et d'acide-basique. Hypoproteinemie rencontrée dans 29.7 pour cent des malades à leur entrée à l'hôpital et dans 88 pour cent des malades nontraités après l'opération est une importante complication. Les sulfonamides nonabsorbables (sulfasuzidine et sulfathalidine) employée avant l'opération pendant trois ou quatre jours, et après l'opération en suspension donnèrent d'excellents résultats dans onze cas de contamination de la cavité péritonéale par matières fécales. L'excrétion urinaire sera controlée. La rétention urinaire peut être due à la destruction ou au traumatisme des nerfs para-sympathétiques.

Les complications peuvent être grandement diminuées par l'étude individuelle des cas avant, pendant et après l'acte opératoire.

SUMARIO

La técnica de Babcock para la proctosigmoidostomía, sin colostomía preliminar, y conservando el músculo esfincter-anal, fueron ejecutadas en un grupo de 208 casos de carcinoma para la extirpación del recto y del sigmoideo. Las ventajas de dicha técnica son que permite excisión radical de la lesión neoplástica del intestino y de las areas glandulares metastáticas aún cuando el campo de resección operatoria es extenso (81.2 por ciento), la mortalidad fué 5.5 por ciento en 155 resecciones; 2.04 por ciento en 49 resecciones consecutivas. Los pacientes operados pueden ser despedidos del hospital más temprano, el período de cicatrización de herida se acorta y el convaleciente vuelve al trabajo en corto tiempo. El músculo anal solo es sacrificado en menos de 20 por ciento de todos los casos.

Especial atención deberá darse a la mantención del balance de líquidos, calóricos, nitrógeno, y el balance de acidos básicos.

Hipoproteinemia, que se encuentra en 29.7 por ciento de estos pacientes, y en 88 por ciento de los casos que no reciben tratamiento postoperatorio, constituye una complicación importante.

Muy satisfactorios resultados han sido obtenidos con el uso de sulphasuxidine y sulphathalidine cuando se emplean por lo menos cuatro días antes de la operación, y usados en suspensión, con excelentes resultados en casos de avanzada contaminación de la cavidad peritoneal con material fecal. Deficiencia vesical, puede ser evaluada por medio de observaciones cistométricas.

Retención vesical puede ser causada por destrucción o daño a los nervios parasimpacéticos.

Complicaciones y secuela pueden ser reducidas por las investigaciones clínicas y manejo especial del paciente antes, durante y después de la operación.

Выводы

Операция Бабкока состоит из брюшно-промежностной проктосигмоидектомии без колостомии и с сохранением мышцы сфинктера. Она была успешно произведена авторами в 208 экстирпациях при раке прямой и сигмоидальной кишек.

Эта операция обладает несколькими преимуществами: она дает возможность радикального удаления злокачественной части кишечника и желёзной области; несмотря на высокий процент оперативности (81,2%) смертность очень мала, только 5.5% в 155 ресекциях и 2.04% в 49 последовательных операциях; она позволяет более быструю выписку из больницы, уменьшает период залечения раны и дает возможность рано вернуться к работе. Не более чем в 20% необходимо пожертвовать мышцей. Но необходимо обращать особенное внимание на сохранение жидкостей и калорного, азотного и кисло-щелочного равновесия.

Низкий протеиновый уровень крови, который обычно константирован в 29.7% случаев при поступлении в больницу и в 88% в нелеченных после-операционных пациентах является важным осложнением.

Не абсорбирующиеся сульфонамиды, именно сульфасуксидин и сульфаталидин, примененные за четыре дня до операции и, в суспензированной форме, после операции, дали великолепные результаты в 11 случаях массовой контаминации перитонеальной полости калом. Нарушение функции мочевого пузыря может быть установлено цистометрическими измерениями.

Мочевое задерживание может быть причинено разрушением или повреждением парасимпатических нервов.

Осложнения и последствия могут быть до большой степени предовращены индивидуализацией исследования и постановки режима каждого пациента до, во время и после операции.

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(Continued on page 92)

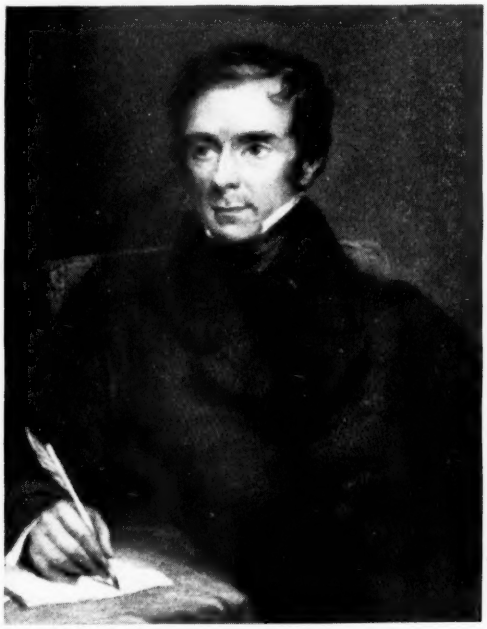
Surgeons and Events

by

DR. MAX THOREK

SIR BENJAMIN COLLINS BRODIE

(1783–1862)



Sir Benjamin Collins Brodie

SIR Benjamin Collins Brodie, cultured English gentleman, was the essence of that frequently scorned and often secretly envied orchid of the medical profession, the "society doctor."

Born at Winterslow, Wiltshire, in 1783, Benjamin was the third son of a clergyman whom God had blessed with four sons and two daughters. Peter Brodie, the descendant of a Jacobite exile from Scotland, sent his children neither to public school nor university, but gave them a rigorous training in Latin, Greek and mathematics, instilling in his sons industrious habits and a love of labor.

In 1798, when England was deep in the throes of war with France, at the age of 14 Benjamin became an ensign in a company of Volunteers.

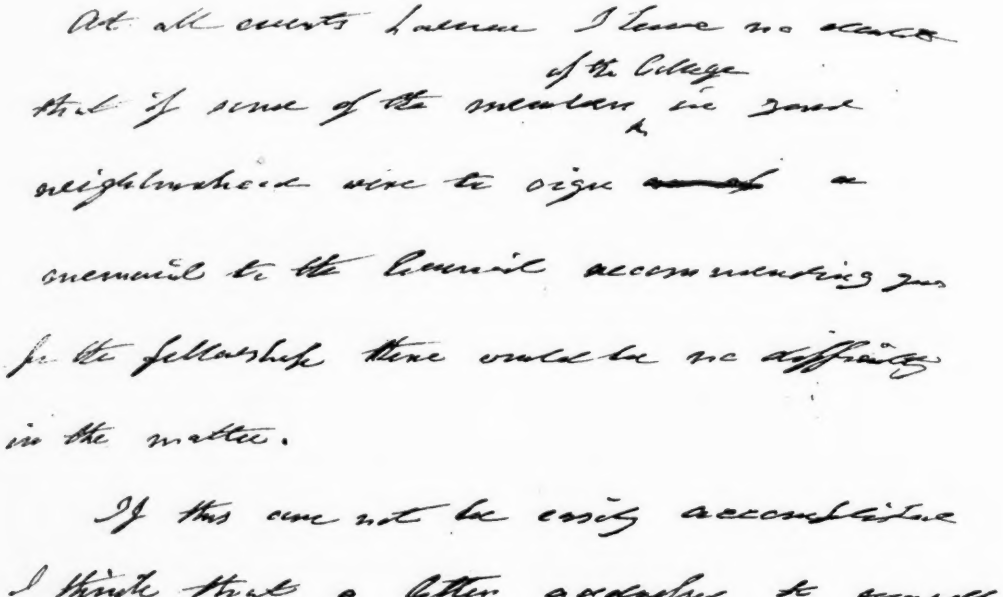
The following year Brodie was sent to London to study medicine under Sir Everard Home. His connections were unusually good. Dr. Denman had married his aunt; Dr. Baillie (Hunter's nephew) and Sir Richard Croft (the leading *accoucheur* of the day) had each married one of his cousins. Through his older brother, who was a lawyer, and a cousin, Benjamin enjoyed the friendship of eminent members of the legal profession and London society. Brodie himself considered his student years (1799–1803) the most important of his life, for during this formative period he acquired the habits of perseverance, industry and concentrated attention which were the the foundation stones of his career. Strangely enough, Brodie had no especial taste or desire for the profession in which he became so proficient. The unremitting zeal with which he attacked his studies sprang from a sense of duty only. It was as a student that Brodie formed a life-long friendship with William Lawrence, the only surgeon of his day worthy to be ranked with Brodie and Sir Astley-Cooper.

In 1801 the young medical student

entered Abernethy's School of Anatomy. The following year he was a pupil in Mr. Wilson's dissecting room and spent some time in an apothecary's shop learning *materia medica*.

House-surgeon at St. George's Hospital during 1805, Brodie resigned to become a lecturer in anatomy at the Windmill St. school, at the same time continuing to attend both Abernethy's and Home's lectures on surgery.

Brodie's first bit of fortune on the



At all events I assure I have no doubt of the College that if some of the members in your neighbourhood were to sign a memorial to the Council recommending you for the fellowship there would be no difficulty in the matter.

If this cannot be easily accomplished I think that a letter addressed to myself from one, or two, or more of the most influential nobility & clergy requesting my support of the cause would be very useful.

Many Apologies
yours truly
B C Brodie

Portion of letter reproduced from original in the collection of the author, showing his interest in promoting the welfare of his colleagues.

road to professional success was Mr. Home's invitation to act as his assistant, a position which Brodie held for two years and a half. At the same time he worked for Mr. Home at the museum of the College of Surgeons.

Soon after, Brodie was appointed to assist Home and Gunning at St. George's Hospital, with which he was connected until 1840. When Gunning went to war, Brodie and Keate took over the work of the junior surgeon. Together they made a real innovation in the surgical practice of that day. They were the first surgeons in England to adopt the practice of daily hospital visits and personal supervision of the care of their patients.

In 1809 Brodie entered private practice, his reputation as a clinical teacher and lecturer on anatomy and surgery already established. His labors were interrupted for a short while by illness, but they were resumed with renewed vigor following his marriage in 1816 to the daughter of Sergeant Sellon, the distinguished lawyer. Brodie's marriage was a very happy one, three children surviving to maturity, namely, Sir Benjamin Brodie, a daughter and the Rev. William Brodie.

At this epoch of his life may already be seen his interest in other branches of medicine than surgery. He was a member of the "Animal Chemistry Club," the "Society for the Promotion of Medical and Chirurgical Knowledge" and the Royal Society. Influenced by Bichat, Brodie devoted much time to physiologic experiments. During 1810–1814 he wrote four papers which greatly enhanced his medical reputation: one on the influence of the brain on the action of the heart; a second on the effects of certain vegetable poisons, which won him the Copley Medal in 1811; a third on the influence of the nervous system on the production of animal heat; a fourth on the influence of the pneumogastric on the stomach secretions.

This period might also be considered the most important from the standpoint of literary productivity. His two publications of note were: "Diseases of the Urinary Organs" and "On the Pathology and Surgery of Diseases of the Joints" (1819).

In 1821 Brodie first attracted the royal attention which culminated in his appointment as Surgeon-in-Ordinary to His Majesty (1828). Two years later he became a constant attendant on the dying George IV. Although he never attended William IV personally, Brodie was appointed Serjeant-Major, an honor which he retained to the end of his life.

After acting as Assistant-Surgeon for fourteen years at St. George's, Brodie became Surgeon in 1822. Dr. Matthew Baillie and Thomas Young, his intimates, were among the influential friends who aided Brodie in his professional advancement. Another friend was Rose.

Brodie had built his own operating theater in Windmill St. and founded a museum of surgical pathology. During the evenings he lectured to the students, but in 1830 during the full tide of success, this teaching was put in the hands of junior colleagues, although he continued to deliver clinical lectures during the early part of the day in the lecture theater of the hospital. As the leading London surgeon, Brodie's private practice during this period was enormous, amounting to between £6,500 and £11,000.

The formation of the Hospital Medical School in 1831 created a situation fraught with complexities. Brodie and Caesar Hawkins were appointed joint lecturers on Surgery, and students obtained their anatomical instruction from

two schools, Dr. Brodie's on Windmill St. and Mr. Lane's. Out of this situation arose a quarrel which saddened Brodie's later years and was only terminated by the removal of Mr. Lane's school to St. Mary's Hospital thirteen or fourteen years later—to the detriment of St. George's. Meanwhile the board room of St. George's was the scene of violent and unseemly disputes, which were carried to public attention by letters in newspapers and by pamphlets.

In 1834 Brodie, the undisputed leader of the surgical profession in London, was made a baronet. At this time also he became officially connected with the College of Surgeons, which owed its prestige for many years largely to Brodie's reform measures. He sponsored the establishment of the rank of Fellow, introducing higher examinations as qualifications for that degree. He instituted vast improvements in every department of the College; henceforth, examinations for membership were conducted at two distinct periods and a part of the examinations were written. Brodie was instrumental in obtaining a new Charter from the Crown in 1843.

In February 1837, Brodie delivered the Hunterian Oration at the College of Surgeons. He also took his first tour abroad, spending a month in Paris. Since the acceptance of a baronetcy entailed the holding of landed property, in 1837 Brodie purchased Broome Park, an estate of 450 acres about twenty-four miles from London. Here during the summer and autumn he spent each week end, entertaining many distinguished guests.

On the occasion of his resignation as surgeon from St. George's, Brodie was honored at a public dinner at which he was presented with the "Brodie Medal," especially designed for the occasion.

Meanwhile Brodie continued to do some writing. In 1854 he published "Psychological Inquiries," a series of dialogues upon the various attributes and states of the mind and the influences acting upon them. They deal with sleep, dreams, death, religion, science, education and other related subjects. Many of his papers in the "Medico-Chirurgical Transactions" of the Royal Medical and Chirurgical Society are still standard authorities on the subjects treated. In 1842 there appeared in the *Quarterly Review* an amusing paper by Brodie on "Quacks and Quackery."

During his later years Brodie was active in a number of scientific organizations, being president of the Royal Medical and Quirurgical Society, the Western Medical and Surgical Society of London, the Ethnological Society, the Social Economy Section of the National Association for the Promotion of Social Science, the General Medical Council and the Royal Society of Medicine.

His integrity of character and his professional prominence are revealed in several instances. In 1850 Brodie attended Sir Robert Peel following the latter's fatal fall from a horse. In 1856 he was called as a witness in the celebrated trial of William Palmer. Three years later his assistance was again invoked to prevent a miscarriage of justice in the Smethurst case, Smethurst being acquitted of the murder of his mistress as a result of Brodie's testimony.

In 1860 failing eyesight caused Brodie to spend the greater part of his time in retirement at Broome Park. Afflicted with severe lumbago, Brodie suffered additional pain when a tumor appeared in the region of his right shoulder. He died on his Surrey estate on October 21, 1862.

(Continued on page 63)

Plastic Operations on the Kidney*

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NEW YORK, NEW YORK

PLASTIC operations on the kidney may be divided into two main groups: those upon the cortex, and those concerned with defects of the kidney pelvis.

Animal experiments performed by the author upon rabbits and dogs have made it possible to do almost any type of operative procedure upon the cortex of the kidney. It was found from these experiments that pads of fat placed upon bleeding vessels and held in place by ribbon gut properly applied could produce almost immediate hemostasis. A series of 16 dogs was subjected to nephrostomy. In upper-pole nephrostomy, pads of fat held in position by ribbon gut stopped the bleeding in an average of 1½ minutes; while particles of muscle applied to a nephrostomy wound in the lower pole of the same kidney, under identical circumstances, took an average of 19½ minutes to produce hemostasis, thus proving the vast superiority of fat as a hemostatic agent in the cortex of the kidney. This method of repairing kidney wounds has made it possible to do many operations upon this organ which formerly were either impossible or hazardous.

Reparation by the wrapping of ribbon gut about the kidney does away with the necessity of placing mattress sutures in the cortex. Since vessels in the renal cortex are terminal, mattress sutures cause necrosis of a fan-shaped area of parenchyma extending from the location of the suture to the limits of the cortex. Not only does this area become necrotic, but it sometimes sloughs away, resulting in massive bleeding that may require nephrectomy.

Conservation of the kidney is a most important consideration; therefore, the urologist must use every means at his disposal to relieve obstruction of the upper urinary tract. This is often due to an aberrant vessel crossing the upper part of the ureter or to actual stricture at the ureteropelvic junction. In the former case, the trouble is readily relieved by ligating and excising the vessel. In the latter instance, more extensive procedures are necessary and these will be described in some detail.

OPERATIONS ON THE KIDNEY CORTEX

Operations on the kidney cortex include numerous procedures which have been made feasible by the development of the fat-and-ribbon-gut method of repair. Among them are: simple nephrostomy, calycelectomy, heminephrectomy, the removal of simple cysts of the cortex, and the excision of pieces of loose kidney tissue, with repair and drainage.

The scope of this paper does not permit descriptions of all of these methods, but it does seem advisable to describe at some length a case of heminephrectomy.

* Presented at the Ninth National Assembly of the International College of Surgeons held at Philadelphia, Pa., Oct. 3–5, 1944.

** The Department of Urology, James Buchanan Brady Foundation, of the New York Hospital.

CASE REPORT

F. P., a female, aged 23 years, was admitted to the Brady Foundation of the New York Hospital, complaining of continual leakage of urine which had existed since birth. She had been told that she had a vesicovaginal fistula. Her past history, general physical examination, and laboratory tests were negative. Vaginal examination showed, 1 cm. below the urethra and to the left of the midline, a small opening which emitted spurts of clear fluid. A probe inserted into this passed easily into what was thought to be the bladder, giving the impression that this was a vesicovaginal fistula. The probe was withdrawn and a ureteral catheter inserted for 20 cm. Cystoscopy, however, revealed no evidence of the catheter. Both ureteral orifices appeared normal in size and location.

It was decided that the patient had an accessory ureter opening into the vaginal vestibule. Retrograde pyelographic studies confirmed this, and showed a left double kidney. The accessory ureter, leading to the upper kidney, was greatly dilated due to a stricture at its lower end.

Under spinal anesthesia, a left heminephrectomy was done through the usual loin incision and under rib-resection technic. The accessory kidney segment was found to form the upper pole of a double kidney, being enclosed within the same capsule. The kidney was freed and mobilized. The supernumerary ureter, which was posterior and somewhat lateral to the normal ureter, was clamped and cut low down and the stump ligated and cauterized. The kidney capsule was then incised, exposing a very shallow groove marking the division between the two kidney segments. The arterial supply to the upper segment was furnished by a branch from the main renal artery. Upon clamping this, the upper segment, consisting of approximately

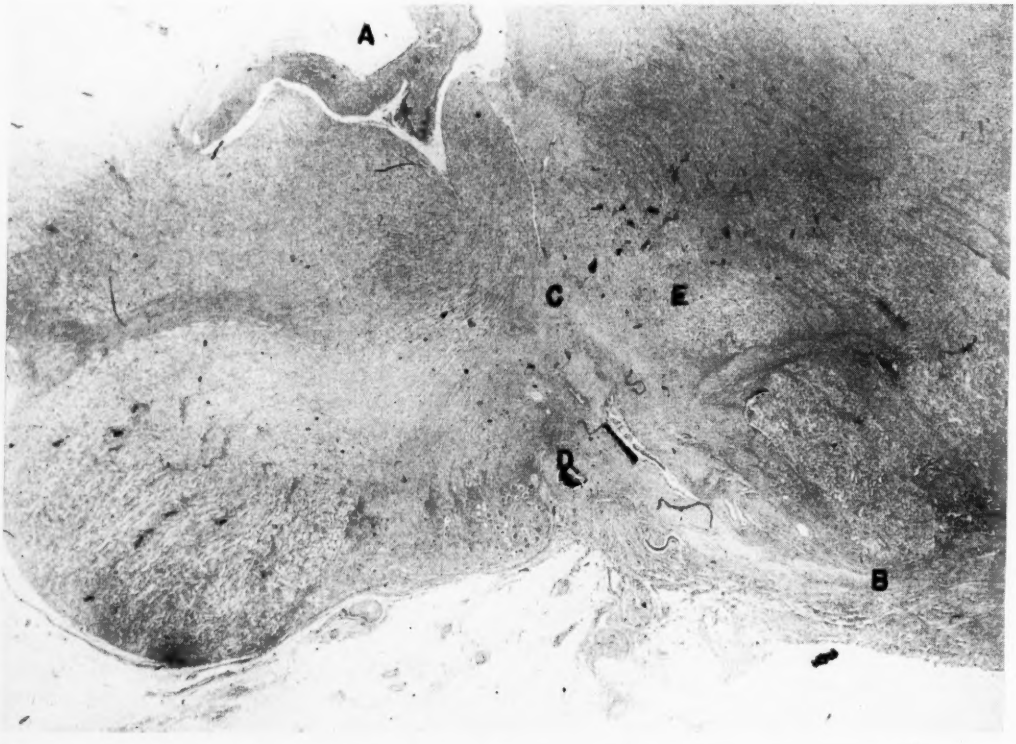

Fig. 1. Calycectectomy by fat-and-ribbon-gut method. Photomicrograph of operative area. (Dog sacrificed eight weeks after scalpel resection of middle calyx.) *A*. Pelvis with mild chronic pyelitis. *B*. Fibrosed capsule. *C*. Operative area. *D*. Small island of bone in scar tissue. *E*. Parenchyma free of infection.

one-sixth of the renal mass, assumed a slightly dusky color. The venous return was evidently through the normal kidney segment. The accessory kidney was excised by sharp dissection through the line of demarcation, very little bleeding ensuing. A pad of fat was

Fig. 2. Right kidney (dog) traumatized without rupturing capsule. Note area of hemorrhage, necrosis of tubules, and deposits of calcium in tubules. This may occur if adequate drainage is not instituted.

placed in this fossa, and the margins of the normal kidney were approximated by interrupted sutures of chromic ribbon gut passed through the capsule.

The patient was discharged on the twenty-third postoperative day, with the wound healed and her incontinence cured. Excretory urograms made one year later showed excellent function of the remaining kidney segment.

PLASTIC OPERATIONS FOR THE RELIEF OF OBSTRUCTIONS AT THE URETEROPELVIC JUNCTION

Many types of plastic operations have been suggested for the relief of obstructions at the ureteropelvic junction, indicating the uncertainty with which this problem is approached. Failures of these various procedures have been estimated at nearly 30 per cent by Mathé, and many urologists have abandoned plastic surgery in these cases because of the unsuccessful outcomes. However, the purpose of all renal surgery (except in malignant disease and tuberculosis) should be the conservation of functioning tissue, if this can be done with safety to the patient.

The success of any plastic procedure on the ureteropelvic junction is dependent upon (1) determination of the *exact* cause of the obstruction before the institution of reparative surgery, and (2) the employment of prolonged nephrostomy drainage and ureteral splinting until the repair is complete.

Most obstructions at this point are due to one or more of the following conditions: (1) stenosis (congenital or acquired); (2) high insertion of the ureter on the renal pelvis; (3) hypertrophy of the ring muscle at the ureteropelvic junction; (4) kinking of the ureter; (5) aberrant renal blood vessels. Frequently more than one factor is responsible. For example: Stenosis and an abberant vessel may co-exist, in which event both conditions must be remedied if adequate drainage is to be established. Merely severing an aberrant vessel outside the ureter, while a constriction within the duct—the real cause

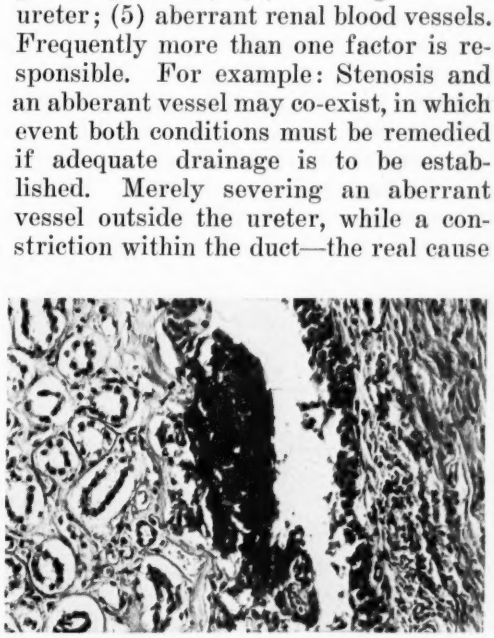

Fig. 3. Left kidney (dog) traumatized without rupturing capsule. Note focus of calcification in pyramid —"Randall's kidney stone"—and area of calcification beneath mucosal lining. This, also, may occur in the absence of adequate drainage.

of the obstruction—goes unrecognized and untreated, will not relieve the obstruction. The presence of obstruction can be shown by pyelography, but

determining the *exact* cause can usually be done with certainty only at operation.

The main reasons for failure in plastic surgery at the ureteropelvic junction are: (1) puckering at the site of repair, (2) leakage of urine from the anastomosis and resulting infection, (3) tension on the repair, (4) new stricture formation in an area bathed by urine, and (5) persistent infection within the kidney.

Puckering may be avoided by the selection of the proper type of repair. For *stenosis,* the most frequent cause of obstruction, we prefer, in most cases, to do a modification of the Y-plasty procedure originally described by Schwyzer and modified by Foley. For *high insertion of the ureter,* we separate the ureter from the pelvis, remove the stenosed area when present, and reimplant the ureter into the most dependent portion of the pelvis, usually by an end-to-end anastomosis, although we have also had success with von Lichtenberg's method (allowing the cut end of the ureter to project into the pelvis for a short distance, the latter being sutured about it like a cuff). These two procedures, the Y-plasty and ureteropyeloneostomy, have proved the most useful and satisfactory of the many plastic operations devised for hydronephrosis due to noncalculous ureteropelvic obstruction. Where there is a greatly redundant pelvis, prior to the performance of the Y-plasty, and sometimes of ureteropyeloneostomy, a portion of the pelvis is excised.

In both of these operations, the chances of urinary leakage, infection, and tension on the repair can be reduced to a minimum by the prolonged use of a nephrostomy drain (Malecot catheter) and a splinting soft-rubber ureteral catheter, as advocated by Henline and Menning in 1943. Postoperatively, pyelograms are made at intervals of three and six weeks after injecting contrast solution through the nephrostomy tube, and so long as there is evidence of extravasation of contrast solution outside the area of repair, the tube and splinting catheter are left in place. When healing is complete—usually in six weeks—both are removed. The renal sinus usually heals in twenty-four to forty-eight hours.

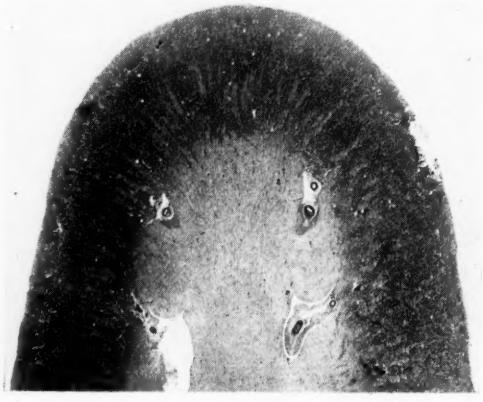

Fig. 4. Photomicrograph, dog. Shows left hemi-nephrectomy with healing. Fat-and-ribbon-gut method.

TECHNIC OF Y-PLASTY PROCEDURE

The kidney is exposed through the usual loin incision, freed from the surrounding tissues and delivered into the wound. Adhesions between the pelvis and ureter are severed, thus exposing accurately the ureteropelvic junction. The latter is carefully examined by inspection and palpation. If the outer circumference of the ureter at this point appears to be normal, but there is doubt regarding the inner caliber, 10 to 20 cc. or more of saline are injected into the pelvis with a fine needle and the peristalsis of the freed ureteropelvic junction observed. If there is delayed emptying, with the adhesions severed, intrinsic stenosis is assumed to exist. If doubt persists, the ureteropelvic junc-

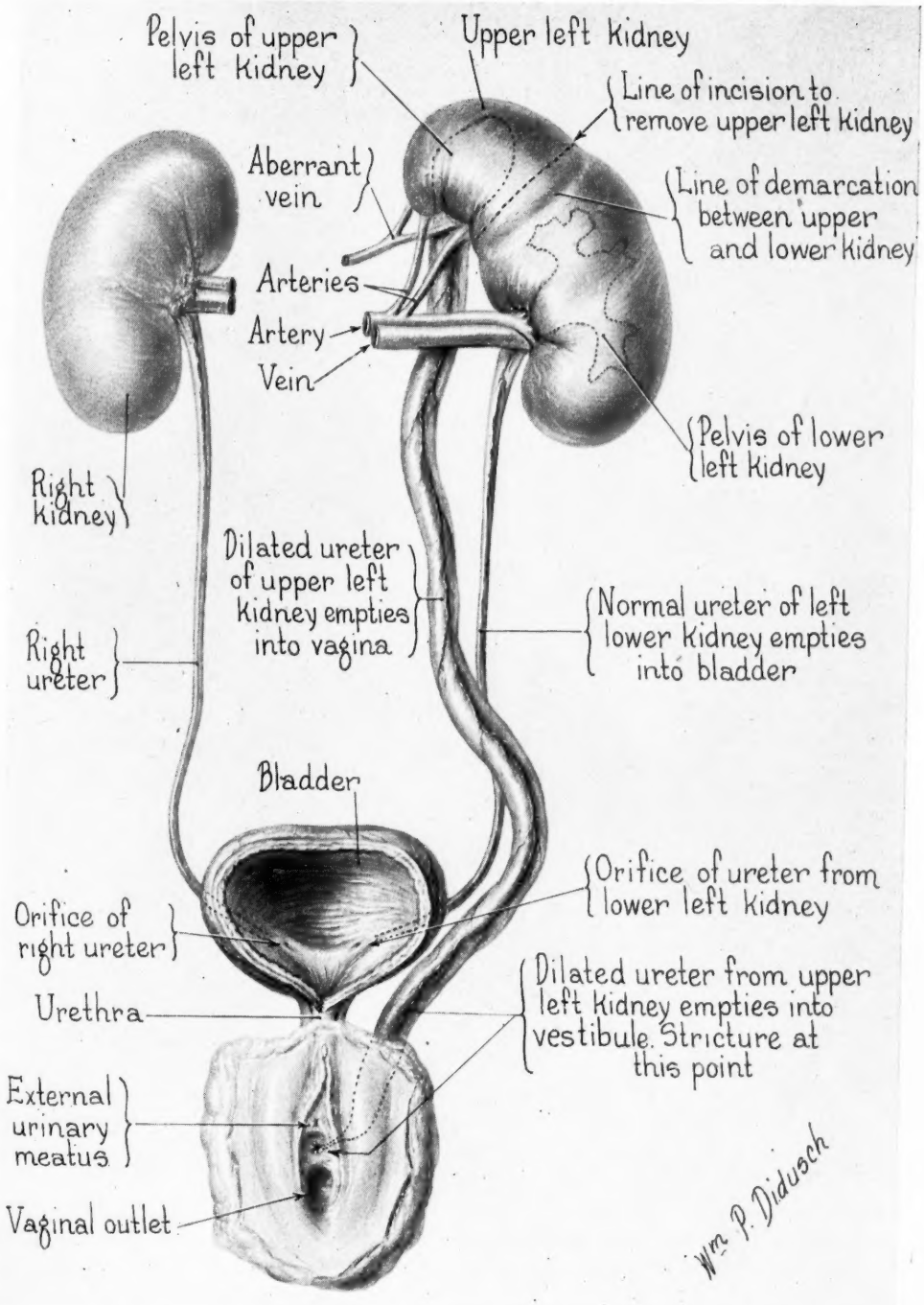
Pelvis of upper left kidney
Upper left kidney
Line of incision to remove upper left kidney
Aberrant vein
Line of demarcation between upper and lower kidney
Arteries
Artery
Vein
Pelvis of lower left kidney
Right kidney
Dilated ureter of upper left kidney empties into vagina
Normal ureter of left lower kidney empties into bladder
Right ureter
Bladder
Orifice of ureter from lower left kidney
Orifice of right ureter
Urethra
Dilated ureter from upper left kidney empties into vestibule. Stricture at this point
External urinary meatus
Vaginal outlet
Wm. P. Didusch

Fig. 5. Heminephrectomy in double kidney with accessory ureter opening into vestibule. Showing condition present before operation: double kidney and ureter on left side. Ureter from the upper kidney empties into the vestibule of the vagina and is distended due to a stricture at its lower end. The ureter from the lower kidney is normal, and empties into the bladder at the usual site on the trigone. (From Lowsley and Conroy: J. Urol., *45*:611, 1942.)

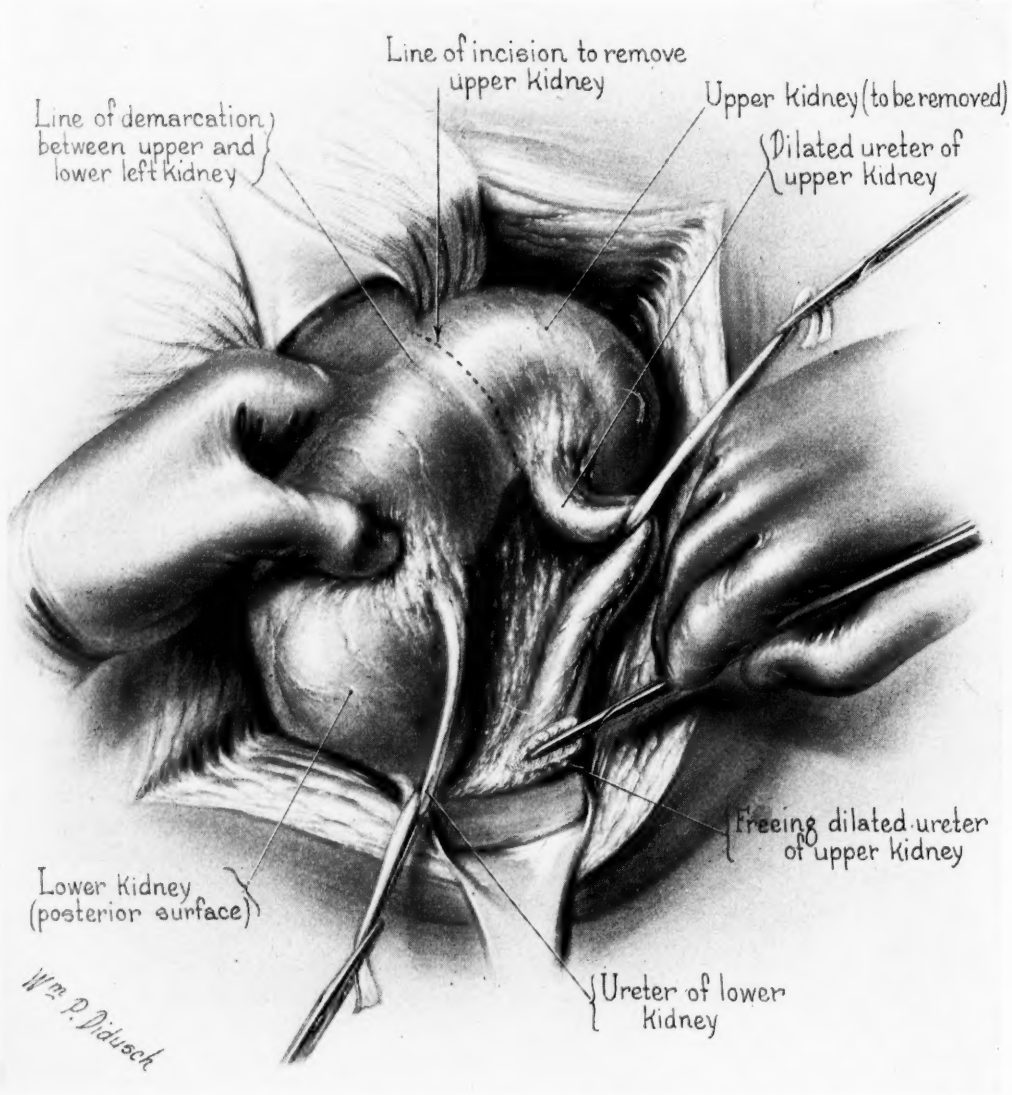
Line of incision to remove upper kidney
Upper kidney (to be removed)
Line of demarcation between upper and lower left kidney
Dilated ureter of upper kidney
Freeing dilated ureter of upper kidney
Lower kidney (posterior surface)
Ureter of lower kidney
Wm. P. Didusch

Fig. 6. (Heminephrectomy in double kidney with aberrant ureter.) The double kidney has been exposed through the usual lumbar incision. The greatly dilated ureter to the upper segment is being freed downward. The ureter to the lower kidney is normal. (From Lowsley and Conroy.)

tion is examined through an incision in the lateral wall of the ureter at this point.

The upper part of the ureter is then freed. A Malecot catheter (usually No. 20 to 26-F.) is pulled through the lower calyx by means of a curved clamp inserted from the pelvis through the cortex. Alongside this is placed a soft rubber ureteral catheter (No. 10, 12, or 14-F.), passed through the nephrostomy wound and pelvis and down the ureter to a point well below the site of repair, to be used as a ureteral splint.

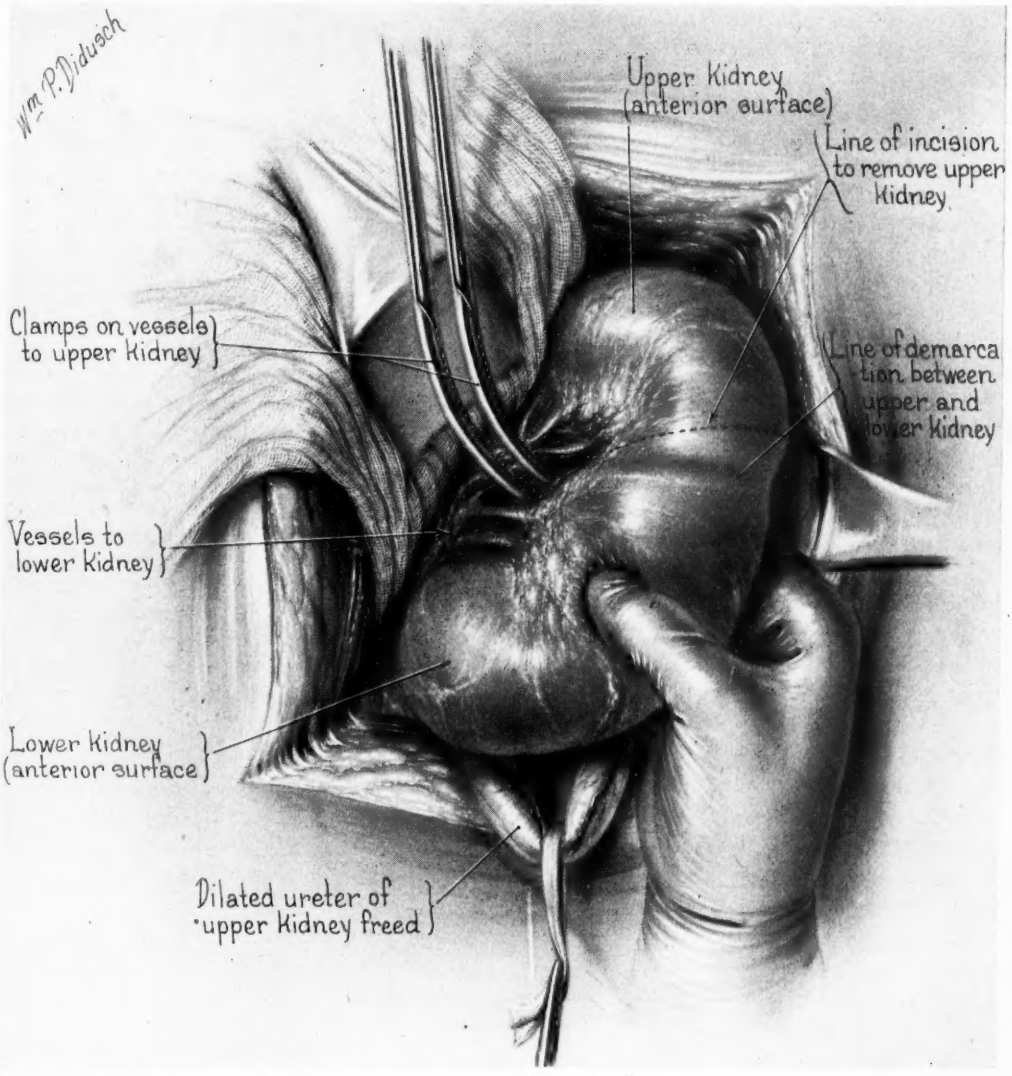
Wm. P. Didusch
Upper Kidney (anterior surface)
Line of incision to remove upper Kidney
Clamps on vessels to upper Kidney
Line of demarcation between upper and lower Kidney
Vessels to lower Kidney
Lower Kidney (anterior surface)
Dilated ureter of upper Kidney freed

Fig. 7. (Heminephrectomy in double kidney with aberrant ureter.) Anterior surface of double kidney, showing blood supply. Clamps have been placed on the vessels to upper segment. The dilated ureter from the upper kidney has been freed downward as far as possible. Note line of incision to remove upper kidney; this is just above the demarcation of the upper and lower kidneys. (From Lowsley and Conroy.)

A Y-incision is then made in accordance with Foley's method, placing the longitudinal incision, or stem of the Y, on the lateral border of the ureter, one arm of the Y on the anterior surface of the pelvis and the other on the posterior surface. The tip of the triangular flap of pelvic wall is sutured to the lower end of the ureteral incision by interrupted sutures of No. 0000 chromic catgut on an atraumatic needle, including all layers of the wall in the suture but attempting to get as accurate an approximation of tissue as possible.

This leaves a *V*-shaped draining ostium at the ureteropelvic junction, which promotes normal drainage.

The kidney is returned to its bed; one Penrose drain is placed at the site of the nephrostomy drainage and another at the site of the repair. The wound is closed in layers—the drains, nephrostomy tube and splinting catheter being brought out near its posterior angle.

Postoperatively the Penrose drains are removed in three or four days, and the nephrostomy drain and splinting catheter in about six weeks. During this period the urine is carefully checked for evidences of infection and as to its pH. It is preferable to have the urine on the acid side as an alkaline infection may lead to the deposition of calcium. Frequent flat plates are taken to rule out the latter. Pyelograms are made at intervals of three and six weeks to check the progress of the repair; and after the wound is healed, retrograde pyelographic studies are repeated and the function and emptying time of the kidney carefully checked. These patients should receive interval dilatations of the ureter postoperatively, the intervals being prolonged with the symptoms and renal findings as a guide.

Illustrating the efficacy of this method is the following case:

CASE REPORT

M. Z., a male, aged 27 years, was admitted to the Brady Foundation of the New York Hospital for the relief of right flank pain of one year's duration, and left flank pain of four months' duration. There were no urinary or gastro-intestinal symptoms, and urinalysis was negative. Retrograde pyelograms showed bilateral hydronephrosis, more marked on the left side, with considerable retention of dye in the 10-minute delayed film.

The right kidney was explored and ureteropelvic stenosis was found. A Foley Y-plasty procedure was done.

Three weeks later, the left kidney was exposed by rib-resection technic and an obstructing fibromuscular ring was found at the ureteropelvic junction. This ring was removed, a Foley Y-plasty was done, and a portion of the distended pelvis was resected.

The postoperative course was uneventful. Both nephrostomy tubes and both splinting ureteral catheters were allowed to remain in for six weeks. The patient was discharged forty-four days after the second operation, asymptomatic and with both wounds well healed.

He returned to the Clinic for regular check-ups. Retrograde pyelograms taken ten months postoperatively showed an excellent result on the right side, with minimal hydronephrosis and no retention of dye in the 10-minute delayed film. The left pyelogram showed marked reduction in the hydronephrosis, with moderate retention of dye in the 10-minute film. At present this patient is receiving interval dilatations of both ureters. His urine remains negative and he is asymptomatic except for occasional slight pain in the left flank.

CONCLUSIONS

1. The fat-and-ribbon-gut method of repairing wounds of the renal cortex has been an important addition to our armamentarium for performing plastic operations upon the kidney.

2. This method permits the removal of large pieces of kidney that have been damaged by traumatism, but the kidney itself will be saved.

3. A calyx which is necrotic and the site of repeated stone formation may be removed with impunity by this method.

4. Simple cysts of the kidney, causing damage within the capsule, may be excised without fear.

5. Heminephrectomy may be successfully accomplished, and the remaining segment of the kidney safely left in, by the fat-and-ribbon-gut method of repairing the line of excision.

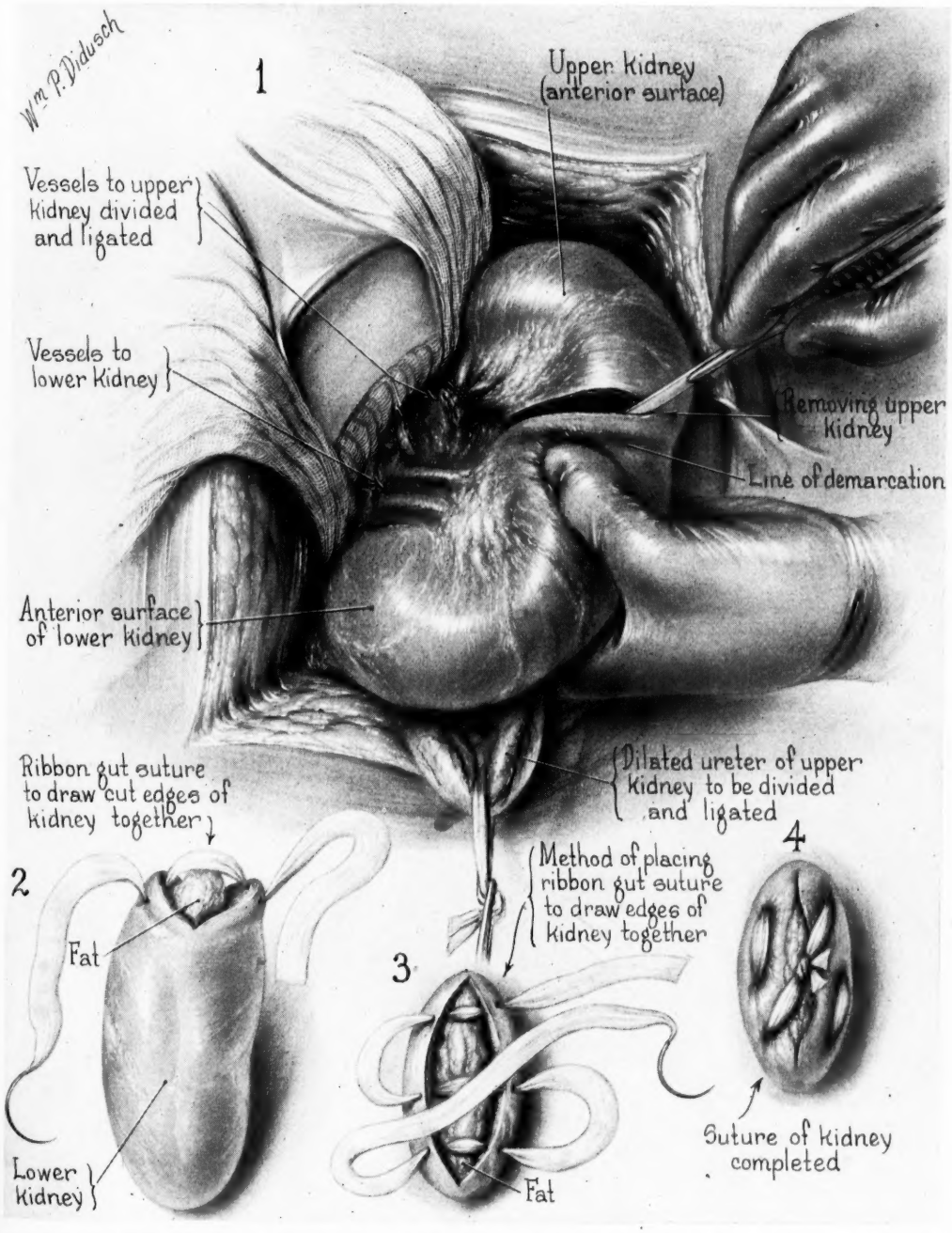
Wm P. Didusch
1
Upper kidney (anterior surface)
Vessels to upper kidney divided and ligated
Vessels to lower kidney
Removing upper kidney
Line of demarcation
Anterior surface of lower kidney
Ribbon gut suture to draw cut edges of kidney together
Dilated ureter of upper kidney to be divided and ligated
4
Method of placing ribbon gut suture to draw edges of kidney together
2
Fat
3
Lower kidney
Fat
Suture of kidney completed

Fig. 8. (Heminephrectomy in double kidney with aberrant ureter.) Removing upper kidney. *1.* Vessels have been clamped, divided, and ligated. Upper kidney being separated from lower kidney by sharp dissection. The dilated ureter to the upper kidney was then clamped, divided, and ligated. *(2, 3, 4)* Showing fat placed in cut surface of kidney and wound drawn together by ribbon-gut suture. (From Lowsley and Conroy.)

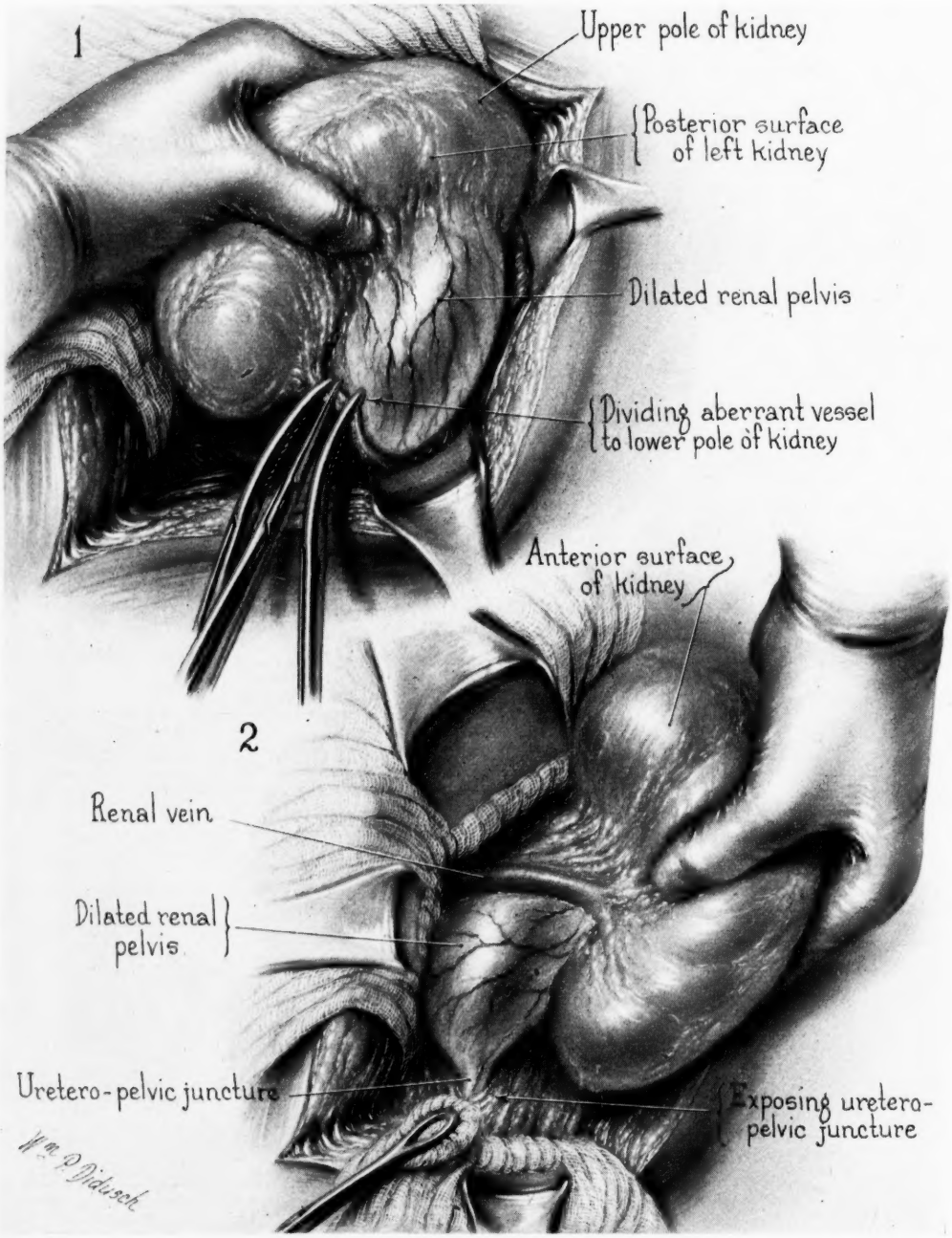

Fig. 9. Plastic operation for ureteropelvic obstruction (resection of fibromuscular ring at ureteropelvic junction; Foley Y-plasty; excision of redundant pelvis). Left kidney. *1.* Posterior surface of kidney and pelvis has been exposed (twelfth rib reseeted). The renal pelvis is greatly dilated. An aberrant vessel to the lower pole is being divided. *2.* Shows anterior surface of kidney. Ureteropelvic junction being freed. (From Henline and Menning: J. Urol., *50*:1, 1943.)

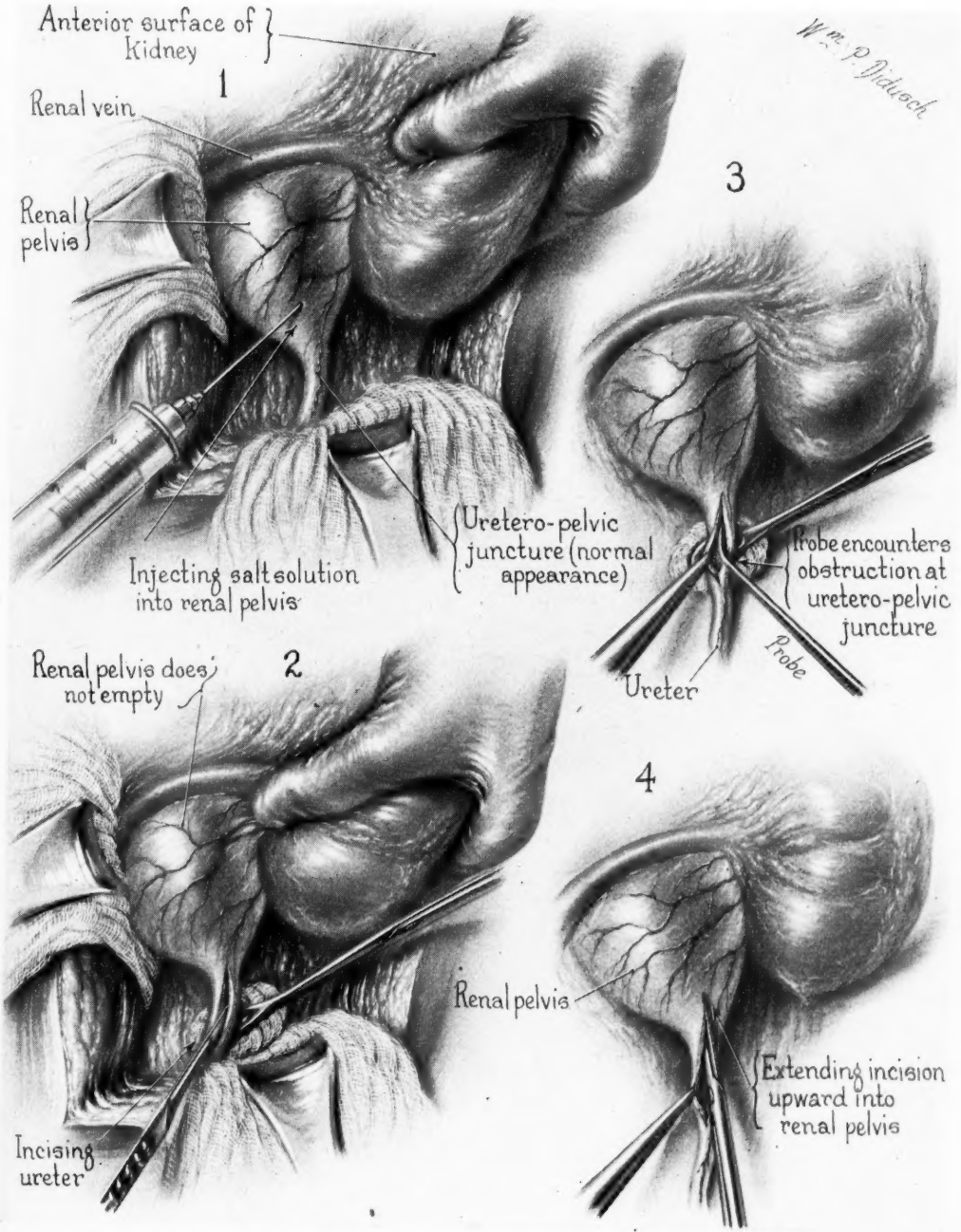

Fig. 10. (Plastic operation for ureteropelvic obstruction; left kidney.) *1.* Ureteropelvic junction has been freed and appears to be normal. Injecting salt solution into pelvis to determine if it empties. *2.* Pelvis does not empty. Incising ureter below ureteropelvic junction. *3.* A probe passed upward encounters obstruction at ureteropelvic junction. *4.* Extending incision upward into pelvis. (From Henline and Menning.)

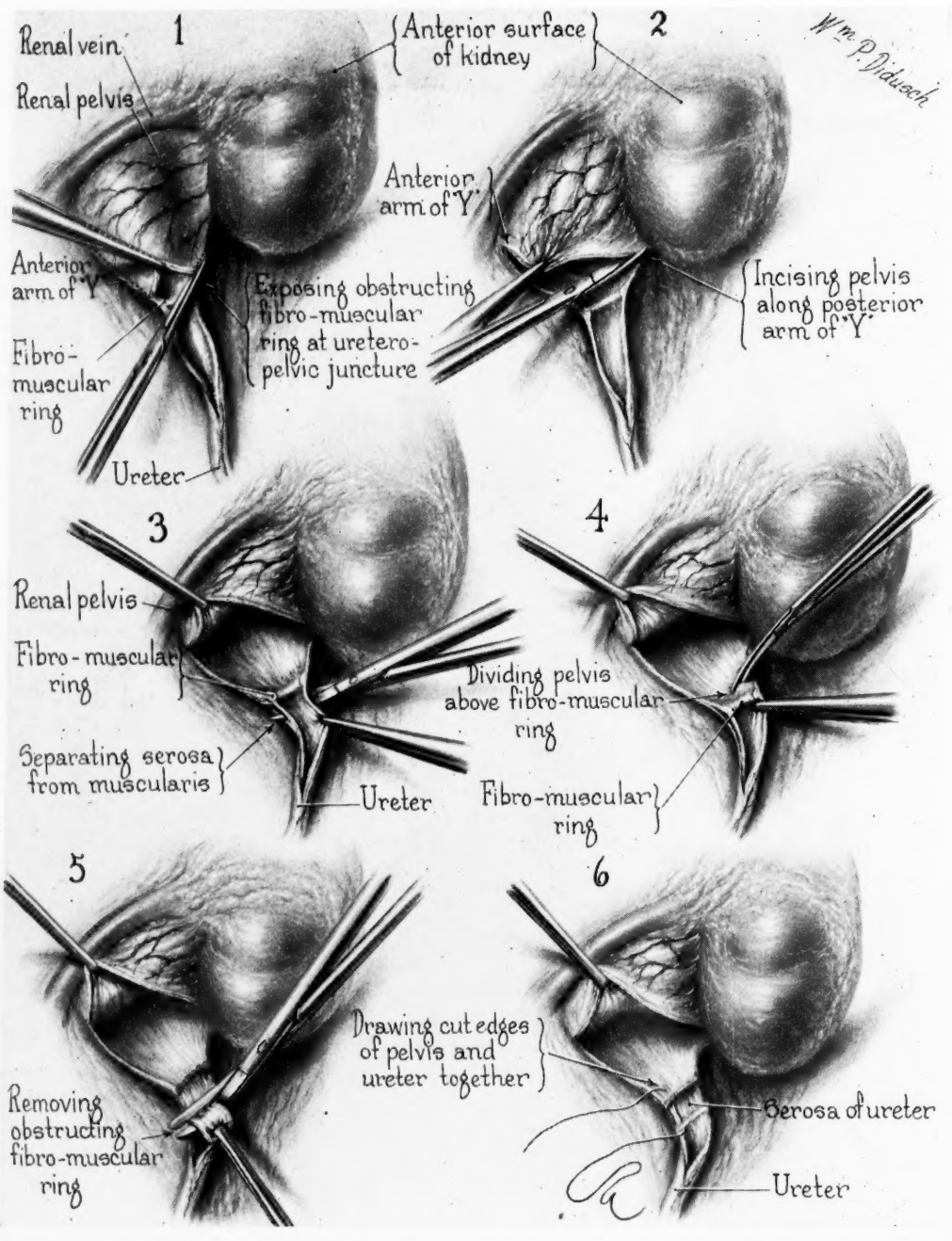

Fig. 11. (Plastic operation for ureteropelvic obstruction.) *1.* Exposing obstructing fibromuscular ring at ureteropelvic junction. Dotted line indicates anterior arm of Y for plastic operation. *2.* Incising pelvis along posterior arm of Y. *3.* Separating serosa from muscularis before removing fibromuscular ring. *4.* Dividing pelvis above ring. *5.* Resecting ring. *6.* Approximating cut edges of pelvis and ureter after removal of obstructing tissue. (From Henline and Menning.)

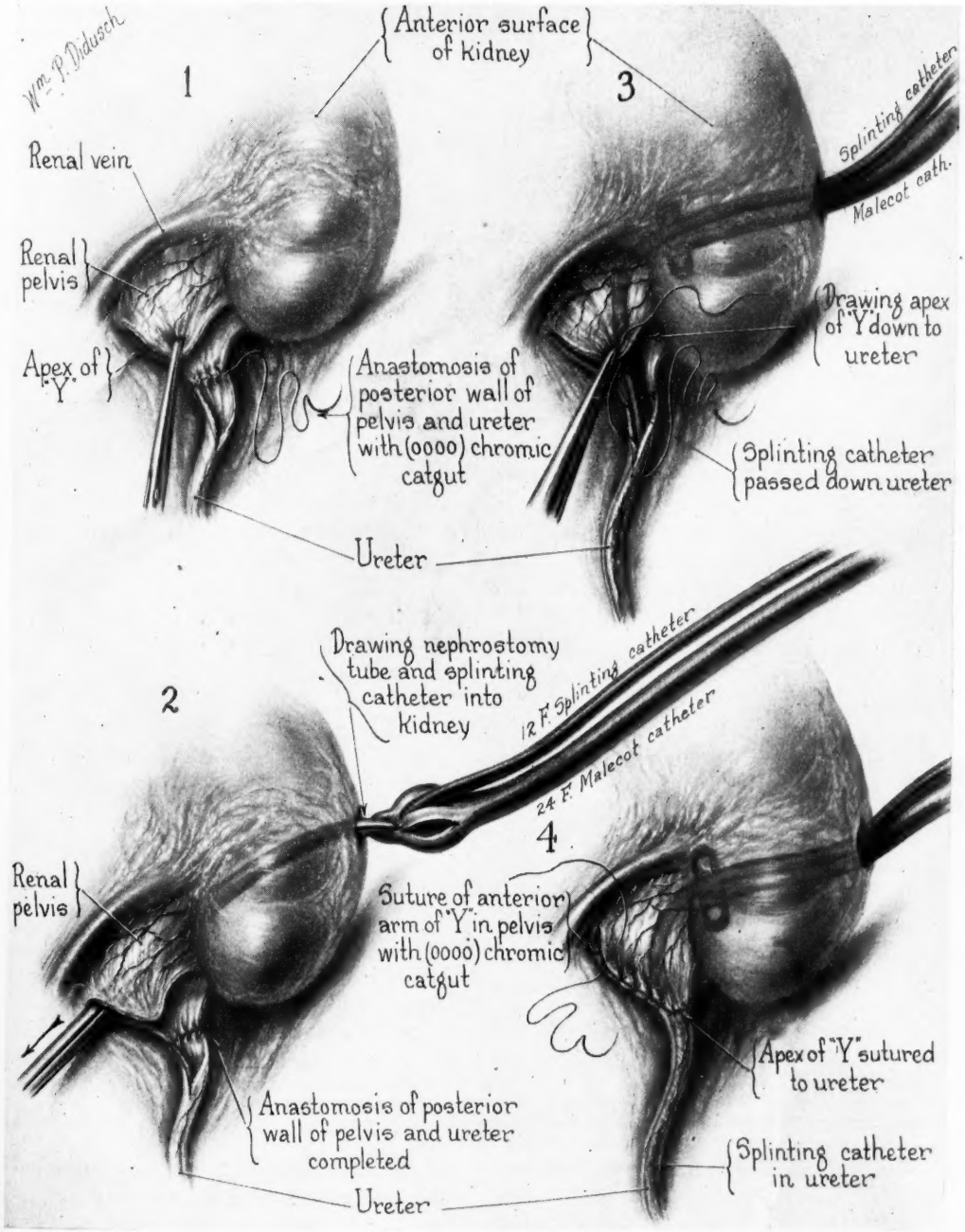
Wm. P. Didusch
1
Anterior surface of kidney
Renal vein
Renal pelvis
Apex of "Y"
Anastomosis of posterior wall of pelvis and ureter with (0000) chromic catgut
Ureter
3
Splinting catheter
Malecot cath.
Drawing apex of "Y" down to ureter
Splinting catheter passed down ureter
2
Drawing nephrostomy tube and splinting catheter into kidney
12 F. Splinting catheter
24 F. Malecot catheter
4
Renal pelvis
Suture of anterior arm of "Y" in pelvis with (0000) chromic catgut
Anastomosis of posterior wall of pelvis and ureter completed
Ureter
Apex of "Y" sutured to ureter
Splinting catheter in ureter

Fig. 12. (Plastic operation for ureteropelvic obstruction.) *1.* Shows anastomosis of posterior wall of pelvis and ureter with 000 chromic catgut. *2.* Drawing nephrostomy tube (No. 24-F. Malecot catheter) and splinting ureteral catheter into renal pelvis. *3.* Drawing apex of Y down to ureter. Note splinting catheter passed down ureter. *4.* Suturing anterior arm of Y in pelvis. (From Henline and Menning.)

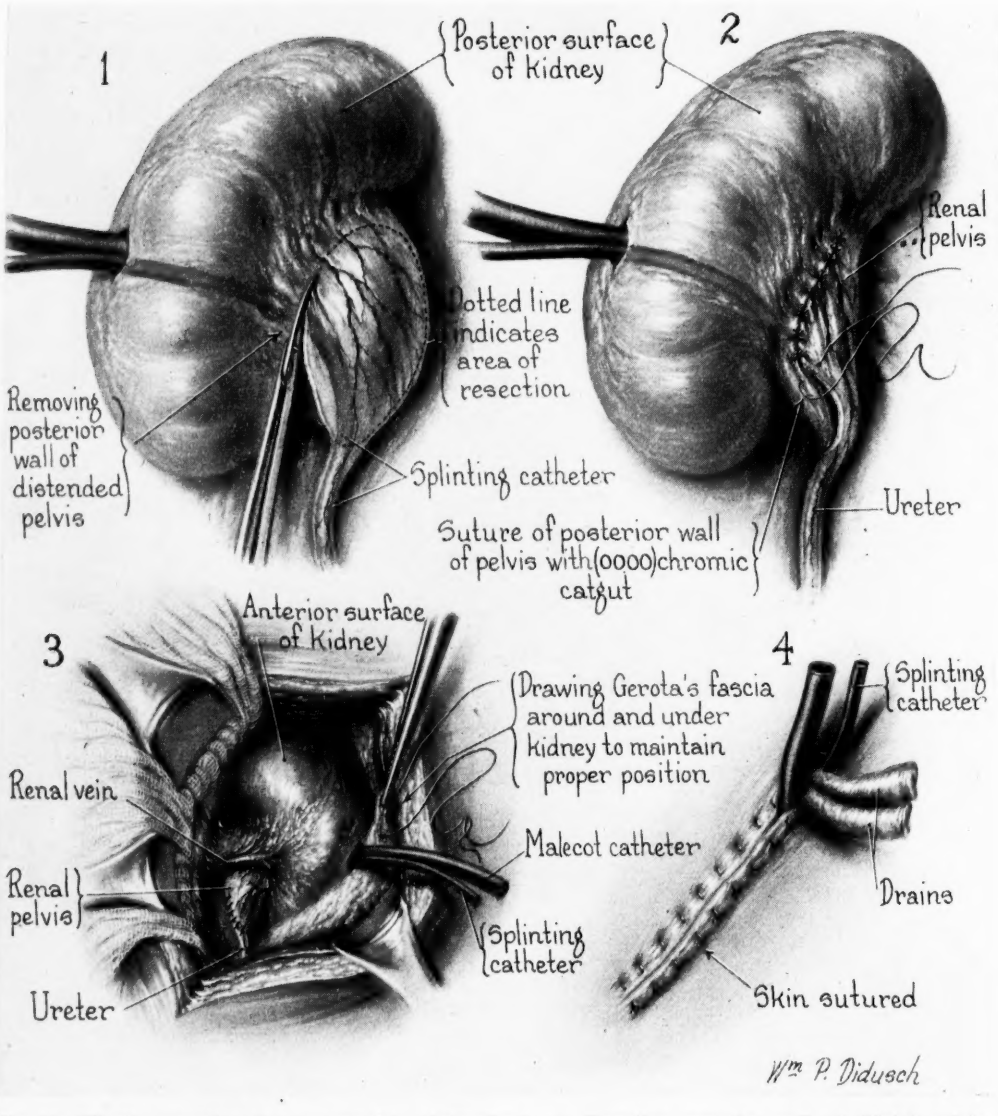

Fig. 13. (Plastic operation for ureteropelvic obstruction.) *1.* Resecting posterior wall of dilated pelvis. *2.* Suturing posterior wall of pelvis with No. 0000 chromic catgut after resection of redundant portion. *3.* Plastic operation completed. Nephropexy done to maintain kidney in position. *4.* Shows closure of wound, with drains, splinting catheter, and nephrostomy tube emerging. (From Henline and Menning.)

6. Removal of the obstruction, resection of the redundant portion of the renal pelvis, and plastic repair with nephrostomy drainage and ureteral splinting for at least six weeks after operation results in relief of most cases of hydronephrosis due to obstruction at the ureteropelvic junction.

RÉSUMÉ

Des opérations plastiques sur la partie corticale et sur le bassin du rein sont

décrites. La technique de la procédure de Y-plastique est expliquée, et un cas est rapporté démontrant l'efficacité de la méthode. L'auteur avance les conclusions suivantes:

1. La méthode "fat and ribbon-gut" de réparer les plaies de la partie corticale du rein a fait ses preuves et est d'une grande utilité dans les opérations plastiques sur le rein.

2. Cette méthode permet l'ablation de grands lambeaux de rein traumatisés, tout en permettant la conservation du rein.

3. Cette méthode permet l'enlèvement d'un calice nécrotique et le siège de formation répetée de calculs.

4. Cette méthode permet l'excision de kystes rénaux.

5. L'héminéphrectomie peut être accomplie avec succès. Le segment du rein conservé est suturé à la ligne d'incision par le "fat and ribbon gut method."

6. Dans les cas d'hydronéphrose due à une obstruction localisée à la jonction utéro-pelvienne, on enlèvera l'obstruction; on fera la résection de la partie redondante du bassin rénal et la réparation plastique. Un drainage d'au moins six semaines par voie néphrostomique donnent des résultats satisfaisants.

SUMARIO

Las operaciones plásticas de la corteza y de la pelvis renal son descritas, la técnica de la Y-plástica es explicada, y un caso relatado por el autor demuestra la eficiencia de este método, con las conclusiones siguientes:

1. El método de "gordo y cinta-intestino" ("fat-and-ribbon gut"), para la sutura de heridas de la corteza renal, constituye una contribución importante a nuestro armamento para las operaciones de los riñones.

2. Este método permite remover grandes porciones del riñon que han sido dañadas por trauma, pero el riñon mismo se salva.

3. Necrosis de un caliz-renal y que es el sitio de repetidas formaciones de cálculos puede ser extirpado con impunidad por este método.

4. Cistes sencillos del riñon, que dañan la parénquima intracapsular, pueden ser extirpados sin temor ninguno.

5. La heminefrectomía se efectua con todo éxito y el segmento del riñon que se deja por el método de "gordo y cinta-intestino" que cubre la linea de excisión.

6. Resección de la area de obstrucción y de la porción redundante de la pelvis-renal y reparación plástica con nefrostomía y drenaje, y descanso al uréter por lo menos seis semanas después de la operación resulta en la mayoría de casos en alivio de la hidronefrosis debida a obstrucción en la juntura ureteropelvical.

Выводы

Описаны пластические операции почечной коры и лоханки, об'яснена техника «Y» пластической процедуры и дан случай, демонстрирующий эффективность этого способа. Автор приходит к следующим заключениям:

1. Способ починки ран почечной коры посредством жирово-кишечной ленты создает очень важный добавочный способ к нашему армаментарию пластических операций почки.

2. Этот способ позволяет удалить большие травматизированные части почки, сохраняя в то же время самую почку.

3. Некрозная чашечка (calyx) и очаг повторного образования камня могут быть удалены без всякого вреда.

4. Простые кисты почки, причиняющие повреждение под оболочкой, могут быть удалены без всякого страха.

5. Применение жирово-кишечной ленты для починки линии сечения позволяет успешно удалить половину почки без всякой опасности для остающегося сегмента.

6. Большинство случаев гидронефроза, причиненнаго препятствием у лохан-

но-мочеточного слияния, могут быть вылечены следующей техникой: удалением препятствия, ресекцией лишней части почечной лоханки и пластической починкой с дренажем нефростомии и шинной поддержкой мочеточника в течении, по крайней мере, шести недель после операции.

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DR. HARVEY CUSHING (1869–1939)

(Continued from page 19)

the P. B. B. H. and the Medical School there were to list for you. The only example of coöperative endeavour that I think is outstanding is the pernicious anaemia work which of course grew out of Whipple's studies of anaemia and in which George Minot at the Huntington Hospital, William P. Murphy here at the Brigham, and Edwin J. Cohn of the Department of Physiology at the School participated.

Still, I suppose the work here on brain tumors may be considered also to be a "coöperative endeavour" in which a group of people have been endeavouring to cover the neurological, ophthalmological, neuropathological, neurophysiological and neurosurgical aspects of intracranial tumors with more or less profit. My young folks staged a celebration here the other day without my foreknowledge on the occasion of an operation at which the 2,000th intracranial tumor was surgically verified. But this was a private and not a public ceremony.

Then of course Cannon's studies of the sympathetic nervous system together with his pupils represent a coöperative endeavour though it is not an interdepartmental affair. And all said and done, I am not so sure that coöperative research is the right way to get things done. It was tried in the War without much success; for after all, everyone works on his own lines and these few things I have mentioned above, with the exception of Cannon's work, have been purely studies with a practical therapeutic point of view, and this is anathema to the medical scientist. . . .

I am delighted to know that you are going to be at Oak Bluffs again this summer and that I may look forward to having a visit with you either there or here, or perhaps an exchange visit, something we have always planned but never heretofore pulled off.

I am so pleased to learn that your year's lectures are going to be published and dedicated to Popsy [W. H. Welch]. I am sure they will be A+ +.

But it doesn't look to me as though your transfer to Baltimore meant that you are in any way easing up, and I shall be glad to learn that you have dropped your work to rusticate in your summer "shack" as you describe it.

Always affectionately yours,
HARVEY CUSHING

VI

Boston, June 27, 1931

Dear Fielding:

Thanks for your delightful letter about that hurriedly written paper for the Mass. Med. Society. I certainly could have done better by the "ripening time" scene which, as a matter of fact, I got from Popsy, he in turn having heard it from someone out in California; so I disclaim any responsibility for it. But as you say it might have been well to have introduced it in ways that you suggest; and if I had only had you at hand so I could tap your ventricles, I would have done better by it, for you are a walking anthology and I am a poor thing in the way of quotations.

Then your No. 2 about Pasteur's pupils: There was a surgeon named La Place who, I think, has joined his fathers who always boasted of being Pasteur's only American pupil, he probably never having heard of Sturgis Bigelow. And after all, I merely hit at these of the time of 1881 for not having appreciated what Sturgis Bigelow really represented. Probably if you and I had been practising doctors of that time, we would not have had any clear perception of what was going on.

As for the things I put in the venerable Dr. Holyoke's mouth, I am not at all sure whether they are his ideas or my own; but I was merely trying to feel my way as to what he perhaps might have thought. I *didn't* say that he had an odd dozen of children by his second wife, only two of whom survived infancy. . . .

Your obedient servant,
HARVEY CUSHING

Dr. Cushing was a great teacher, pioneer and medical leader. His ability and attainments were recognized by the profession the world over, and numerous honors and distinctions were crowded upon him. He holds a notable place in the history of medicine among the pioneers in neurosurgery. His character and accomplishments inspired respect, admiration and esteem.

Vaginal Hysterectomy: Indications and Advantages *

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WHEN it is necessary or advisable to remove the uterus, three operations are available: (1) complete vaginal hysterectomy; (2) complete abdominal hysterectomy; (3) supra-vaginal hysterectomy. In this age of advanced surgical technics it can be said, without fear of serious criticism, that complete hysterectomy, by either the vaginal or abdominal approach, should always be the operation of choice. Supra-vaginal hysterectomy may become an operation of necessity, but never of choice. *Inability to do the complete operation should never be a consideration.* Complete mastery of a technic for the total removal of the uterus by both the vaginal and abdominal route is the minimum standard of operative skill that every gynecologist should exact of himself. Certainly an operator who resorts entirely to the supra-vaginal operation is not a competent gynecic surgeon. An analogous situation exists in obstetric surgery. Occasionally it may be necessary to do the antiquated classical cesarean section; but surely the low cervical, preferably with the transverse incision of the cervix, should be the operation of choice in all clean cases.

It should not be necessary to dwell at length on the matter of superiority of complete over incomplete hysterectomy. That question is decisively and definitely settled. The danger of cancer developing in the cervical stump, the infected cervix acting as a site for focal infections and being the cause for persistent leucorrhoea and also being the cause of much postoperative disability, demands that a hysterectomy should be complete wherever possible. In years gone by when fear of stump cancer was the only argument advanced by the proponents of complete hysterectomy and the abdominal route the only method considered, an apparently valid position was held by the advocates of the incomplete operation. They held that the incidence of stump cancer did not compensate for the increased operative mortality of the complete abdominal operation over the supra-vaginal hysterectomy. That position is no longer valid as it is the experience of most competent surgeons that in comparable cases the complete operation, while admittedly slightly more difficult, has a lower mortality and morbidity rate and presents fewer postoperative complications than supra-vaginal hysterectomy.

As this thesis deals with vaginal hysterectomy, we will not enter in detail into the argument as to the relative safety of the complete and incomplete abdominal hysterectomy. Suffice to report briefly the experiences of a few competent observers. Joseph V. Meigs [1] reviewing stump cancer said, "I feel sure that from now on, whenever possible, I will do a total hysterectomy." George Gray Ward,[2] "I believe the entire uterus should be removed providing it will not be a matter of undue

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risk to the patient." N. Sproat Heaney,[3] "A trained gynecologist should be able to do a complete abdominal or vaginal hysterectomy with as much ease and familiarity as a supra-vaginal hysterectomy." James R. Goodall[4] called attention to the greater frequency of postoperative complications and higher morbidity in the supra-vaginal hysterectomy over the complete operation. He has changed from the incomplete to the complete operation without any regrets. Edward H. Richardson[5] stated, "Concerning the controversy of total versus sub-total abdominal hysterectomy, I do not see why there should be any difference of opinion of the desirability of removing every diseased cervix." Baldwin advises panhysterectomy always, since he believes the cervix is useless. Gellhorn[6] advised routine complete hysterectomy. Smith[7] and Danforth[8] found a lower mortality and morbidity rate in the complete operation. E. VonGraff,[9] in a study of the incidence of stump cancer, favored the complete hysterectomy. Counsellor[10] favored total hysterectomy. Pease performed sub-total hysterectomy only when the complications were so extensive that the complete operation could not be done with safety. Many other authorities could be quoted endorsing the complete operation; but of course one will find surgeons who oppose the operation as a matter of choice. In the main their objections are that it is a more difficult and time consuming operation, that injury to the bladder and ureters is more frequent and that the incidence of stump cancer is overemphasized. These objections are not valid. Not only is the mortality, in the hands of competent surgeons, less in the complete abdominal over the incomplete operation, but the operative and postoperative complications are greatly reduced. These fortunate results are due to the fact that the infected or potentially infected cervix is removed in complete hysterectomy.

The real crux of the question of complete versus incomplete operation is the danger of stump cancer. It is impossible to chart from personal experience or available statistics the exact incidence of stump cancer. Joseph V. Meigs[11] reported three cases of stump cancer in patients upon whom he did a supra-vaginal hysterectomy. In addition he stated that in a series of 1200 cases of cancer of the cervix seen at Pondville Hospital he found 100 cancers of the cervical stump. He made the very important observation that about 10 per cent of the cervical cancers occurred in nulliparas. George Gray Ward[12] stated "that in his clinics at Women's Hospital, New York, in 1940 we found 7 per cent (6.9) of 879 cases of cervical cancer had cancer of the stump." He also had nulliparas among that number. Curtis F. Burnham[13] reported that Howard Jones of the Kelly Clinic had recently reviewed 700 consecutive cases of carcinoma of the cervix. Among the number were 51 cases of carcinoma of the stump, or 7 per cent. These reports show a high incidence of stump cancer, perhaps too high. In a study just completed at Johns Hopkins Hospital Clinic, Erle Henrikson found among 940 cases of cancer of the cervix an incidence of stump cancer of 2.3 per cent and that in similar statistical reports the incidence of stump cancer ran as high as 4 per cent. Healy and Aronson[14] at Memorial Hospital studied 1000 cases of cancer of the cervix and found only 2 per cent of their cases were bona fide cancers of the stump. Many other reports could be quoted, showing the incidence of stump cancer to vary statistically anywhere from 2 to 7 per cent with the average at about 4 per cent.

Statistics available on this question are not of too much value as too many varying factors are present. Personal experience varies. Meigs observed one hundred cases of stump cancer, while Healy with a very large personal experience observed only about twenty cases. Then again many of the reported cases undoubtedly had unrecognized cancer of the cervix at the time of the hysterectomy and therefore were not true cases of stump cancer. It is important to note, however, that if in these cases the entire uterus had been removed, the early cancer of the cervix would have likely been cured in most of the cases. It is not the statistical frequency of stump cancer that should determine this question. What practical difference does it make whether statistics show an incidence of 2 or 7 per cent? The things to remember are, first, that the cervix is one of the most frequent sites of cancer in the body, that in spite of advanced knowledge as to treatment, either by radiation or extensive operation, it is still one of the most frequent causes of death in women past 45 years, and, secondly, that we do not have at our disposal any measure that will prevent cancer short of removing the uterus.

Many reports have been published in the past extolling cauterization, conization and other methods of healing ulcers or destroying them as a prophylactic against cancer. The teaching that ulceration of the cervix is a precancerous lesion is just as valid as the old idea that ulceration of the stomach was precancerous. Gastro-enterologists have long discarded that fallacy and we no longer see resection of the ulcer bearing area of the stomach simply to prevent the development of cancer. The only safe cervix is one that is outside the body and as we cannot tell what cervix will or will not develop cancer, that statement holds for healthy as well as diseased cervices.

Meigs in his 1200 cases stated that 10 per cent, or 120 cases, were in nulliparas and it is a common experience of all gynecologists to observe cancer in nulliparas and even virgins. While most cancers of the cervix develop in multiparas, we are certain that when the relative number of multiparas and nulliparas living at the same age are studied, the incidence would be about the same for both groups. Of course in virgin nulliparas it is impossible to say what was the condition of the cervix, as no examination was likely to have been made until the cancer developed; but it is again likely that the cervix was not diseased as in multiparas. Walter Schiller has shown that when cancer of the cervix develops in an ulcerated cervix it does not develop in the ulcer, but in healthy mucous membrane adjacent to the ulceration. Ward holds that cauterization or conization of the cervical canal is no safeguard against cancer, as 80 per cent of cancers develop in the portio vaginalis. Waters evidently is of the same opinion, as he not only cones out the cervix, but removes the portio vaginalis with the cutting current, using a wire loop. N. Sproat Heaney, in doing a supravaginal hysterectomy, leaves the cervix alone, as he holds that to cauterize or cone only invites disaster or morbidity. This is our experience and practice.

It is our practice to always do a complete hysterectomy either by the abdominal or vaginal route except in those cases where complications are so extensive or serious as to preclude the operation. In previous papers [15] we have set forth the advantage of vaginal hysterectomy over complete abdominal hysterectomy. This report is based on

an experience of 2427 vaginal hysterectomies with six deaths, a mortality of 0.24, or ¼ of 1 per cent. N. Sproat Heaney [16] recently reported 1056 vaginal hysterectomies under ethylene with three deaths, a mortality of approximately ¼ of 1 per cent, the same as ours. Babcock had a series of 300 cases with a zero mortality. Danforth [17] reports 266 cases with a zero mortality. Kennedy in 2000 vaginal hysterectomies (clamp method) had a mortality of 0.02 per cent. Here is an experience of 6000 vaginal hysterectomies for a variety of indications by five scattered operators, using different technics, with a maximum mortality of ¼ of 1 per cent. We doubt if there is another major surgical procedure that offers as great a margin of safety. Danforth's [18] morbidity in his 266 cases, based on the standards of the American College of Surgeons, was 9.02 per cent, a truly remarkable record, but in keeping with the experience of all vaginal surgeons.

With evidence of such a low mortality and morbidity rate we always elect to do a vaginal hysterectomy within its limitations wherever a hysterectomy is indicated. This favorable mortality and morbidity rate widens the scope of the operation so that we, in our clinic, operate for conditions which would not justify the abdominal approach. In addition to the safety of the procedure there are other factors that make the operation the more desirable method of approach. The absence of an abdominal incision with the resulting scar is a great advantage, not only from a cosmetic viewpoint; but in a broader sense this advantage is of paramount importance. Incisional hernia does not occur and complications, such as adhesions of omentum and intestines to the scar, infections and separation of the incision, are eliminated. Because of fewer immediate and late complications, convalescence is smooth and return to health is rapid. The absence of an incision makes limitation or prohibition of normal activities unnecessary and the woman can dress as she pleases. Owing to its safety, the absence of shock, its low morbidity and rapid convalescence, vaginal hysterectomy is the operation of choice in the aged and in those who for any reason are regarded as substandard surgical risks.

As the result of a long and satisfactory experience we use spinal anesthesia almost routinely, but rectal avertin or local anesthesia with sedation can be successfully used. As there is no need for extreme relaxation and as the operations are less time consuming, there is a wider field for the selection of an anesthetic and the amount required is less, this materially lessening the anesthesia risk.

When it is necessary to combine a vaginal plastic operation with removal of the uterus, vaginal approach to the problem offers many advantages over the usual plastic and section procedure. There is no reason to complicate a single and rational approach to a pelvic surgical problem by an added operation. The time consumed in changing over from a plastic to an abdominal operation with the closing of the incision adds 30 to 45 minutes to the operation time. In addition to the added time, there is the resulting confusion, which may cause a break in the technic and thus endanger the patient. When the vaginal approach alone is used, the operation moves smoothly and rapidly to its conclusion without changing the position of the patient or operator and without the confusion of redraping the patient. In using the vaginal approach it is never necessary to do a two-stage operation regardless of the age or con-

dition of the patient. If she can tolerate either the plastic or vaginal section, she can bear both procedures.

The operation is more economical both for the patient and hospital. The institutional saving is considerable in bed days and supplies. The patient benefits in hospital costs by lessening convalescent period. There is no need for special nursing care and no necessity for special medication and expensive abdominal supports or a particular type of corset. Convalescence is rapid and complete, and the need for additional help in the home is of short duration. The foregoing, together with these economic factors, constitute some of the advantages of the vaginal over the abdominal hysterectomy.

At the expense of repetition let us emphasize the statement that there is no known satisfactory prophylaxis against the development of cancer of the cervix or body of the uterus short of complete hysterectomy. While radium cures cancer, there is no reason to believe that its application for benign lesions protects the uterus from the later development of a malignancy. Certainly an unbiased study of the question shows that all efforts to reduce the incidence of cervical cancer by attempting various methods to restore the ulcerated and infected cervix to a normal condition have resulted in failure. We do not wish to be misunderstood as advocating wholesale removal of the uterus as a prophylaxis against cancer. What we do approve of is this: After a woman has reached an age when the uterus is no longer a useful organ or when the cervix is so badly diseased as to require high amputation, deep and repeated cauterizations, or extensive conization, she would be better served by a vaginal hysterectomy. As has been shown, the risk of the operation is practically nil and the morbidity is certainly less than in any of the outlined substitute treatments of the cervix. If we had to choose between an extensive amputation of the cervix and vaginal hysterectomy, we would rather perform the latter. It is a much more satisfactory procedure and technically much less difficult operation to perform.

The indications for the operations were as recorded in Table I. Our experience as to indications and results parallels very closely that of Heaney and Danforth. Our enthusiasm for vaginal hysterectomy has not blinded us to its limitations and contraindications. As a matter of fact, surgical judgment based on a large and varied experience has taught us that neither vaginal nor abdominal section has universal applications. All of our patients are routinely prepared for both the abdominal and vaginal approach, and often the decision as to method is not made until the final examination while the patient is under the anesthetic. Having decided on the vaginal operation, we have been fortunate enough in our series of cases to complete the operation by that route.

While all our cases have been carefully selected, a study of Tables I and II will disclose that in no sense have they been hand-picked, but that we have been able to use the operation for the correction of many varied pelvic lesions. As one's experience grows, the scope of indications for the operation expands. We are decidedly against making vaginal section a "bag of tricks" and exploiting the legerdemain of the surgeon rather than his matured judgment.

Some special indications and its advantages will now be considered. As in our previous communications, fibroid tumors of the uterus still remain the most frequent indication for the operation, 1627 in this series. There was an

era in the treatment of fibroid tumors when x-ray and later radium entered into serious competition with surgery. That era is now past. Today there is but one treatment for these neoplasma —surgery. Practically all sub-standard risks can be made safely operable by modern methods. We will not discuss again the relative merits of complete and incomplete hysterectomy in the treatment of these tumors. We hold that the weight of evidence is overwhelmingly in favor of the complete operation, that the incomplete operation should never be the operation of choice or used routinely. To assume any other position would be a step backwards in surgical progress.

We hold that within certain narrow limitations as to size of growth and inflammatory complications, vaginal hysterectomy is the operation of choice in most of these growths. Uncomplicated tumors of the size of a four-month pregnancy can be safely and readily removed by vaginal hysterectomy. In arbitrarily placing the size of the tumor at four months, it must not be understood that the size of the tumor alone offers any serious impediment to the skilled vaginal operator. Much larger tumors can be removed safely and bloodlessly by morcellation. We have removed 1627 tumors, varying in size from an orange to a five-month pregnancy, by the vaginal route with four deaths. It will be noted that 171 of these cases were associated with such complications as chocolate cysts, ovarian tumors, tubo-ovarian disease and adhesions.

The next most frequent indication for vaginal hysterectomy in our series was prolapse of the uterus associated with vaginal prolapse. We have lived through an age in the treatment of prolapse, beginning with abdominal or vaginal fixation of the uterus associated with vaginal plastics; Goffe operation; Alexandroff operation; the Watkins interposition; Fothergill, etc. The Watkins interposition operation was one of the great advances in gynecic surgery of this century and for a time seemed to be the answer to a problem that had baffled surgeons for generations. It cured the prolapse of the uterus and the associated cystocele in the majority of cases; but with its universal acceptance, experience showed too many failures and many serious postoperative complications. It was not to be performed in the child-bearing woman unless she was sterilized, on accouunt of the serious birth complications resulting from it. As was to be expected, many patients developed cancer of the uterus and the treatment of the cancer either by radium or hysterectomy was made more difficult. Mayo, Heaney and Goffe, among others, realized that the uterus was not necessary to the success of the operation. Mayo and Heaney removed the uterus and transplanted the united broad ligaments between the bladder and vagina. Goffe previously in his No. 2 operation removed the uterus, united the broad ligaments and suspended the bladder on the anterior face of the united broad ligaments. Some surgeons are now returning to a modified Goffe technic.

We have been performing two types of operations in which the results are so near perfect that in our clinic we rely entirely on the Fothergill in the preclimateric cases or where it is advisable to preserve fecundity or menstruation. We use the Mayo-Heaney technic in all other cases, except occasionally we do a Le Fort in the aged or in those cases where an ill-advised and poorly executed complete abdominal hysterectomy had been performed. We have performed vaginal hysterectomy with interposition of the united broad ligaments with satisfactory results in 376 cases with two deaths.

The third most frequent indication

for the operation was hyperplastic or fibrotic uteri with excessive bleeding in or about the menopause. In these cases we formerly used radium and at times x-ray; but we now have discarded radiation treatment and resort entirely to vaginal hysterectomy. We have rejected radiation therapy for the following reasons: (1) We were never able to treat, satisfactorily, menopausal symptoms caused by irradiation. (2) Radium gives no protection against the subsequent development of cancer of the uterus. (3) Irradiation in a small percentage of cases produces pathology in tissues and organs adjacent to the uterus. In our experience the normal menopause is seldom a major problem; but when the menopause is brought on suddenly, either by surgery or irradiation, it frequently is a major problem defying any form of hormonal therapy. In the preclimateric cases the ovaries are left when the uterus is removed and the patient can enter an accelerated, but normal, menopause.

Many surgeons have reported cases of carcinoma of the uterus, particularly of the fundus, subsequent to the application of radium in the treatment of benign lesions of the uterus. Some have even raised the question as to the possibility of the radium being the cause of the cancer. This is too complicated a problem to discuss in a thesis of this character. Lewis C. Sheffey has recently published a masterly study of this problem and his paper, together with the discussion by leading members of the profession, can be found in *Transactions of the American Gynecological Society,* 1942, page 288. We have never experienced the extensive rectal, intestinal and bladder injuries reported by Aldrich[19] following the treatment of cancer of the uterus with radium, from the much smaller dosage used in treatment of benign lesions of the uterus. We, however, have frequently experienced an unrecognized latent infection of the pelvis stimulated into activity. We also have noted severe irritation of the rectum and not infrequently low grade ulceration of the bladder. We did vaginal hysterectomy in 322 cases with no deaths. By vaginal hysterectomy we have not endangered our patients, have avoided unpleasant sequelae and protected them against the possible development of cancer.

The fourth most frequent indication for the opertaion was extensively lacerated, ulcerated and infected cervices. These were the type of cases where we formerly did a high amputation by the Sturmdorff or Kocher technic, or where we did an extensive conization with the Bovie current by the Hyams technic, or treated conservatively by repeated cauterization. We had sixty-three patients in this category with no fatalities and with much less morbidity than with former conservative measures. As previously stated, amputuation, conization and cauterization of the cervix do not prevent cancer. To those who believe that diseased cervices predispose to cancer there can be no valid objection to the total removal of the uterus. It is our experience that it is much simpler to do a vaginal hysterectomy than a high amputation of the cervix.

In the time allotted this discussion one cannot do justice to an adequate consideration of the place of vaginal hysterectomy in the treatment of cancer of the cervix. Those familiar with the Vienna School and the work of Schauta know it has an important though controversial place. It will be noted that we had nine cases of cancer of the cervix associated with uterine prolapse. These were very early involvements and were only diagnosed by the routine pathologic studies to which all tissue is submitted when removed. In the definite cancers

of the cervix it is our practice to rely entirely on irradiation treatment.

The treatment of choice for cancer of the body of the uterus has not as yet been determined by us. We are keenly aware of the treatment by large doses of radium, but we are not ready to discard total hysterectomy. In our series, twenty-two uteri were removed by the vaginal route. The frequent and serious injury to the rectum, bladder and intestines after large doses of radium in the treatment of fundus carcinoma is a deterrent to its universal use.

There is one misunderstanding about vaginal hysterectomy that needs clarification. It is frequently stated that the operation is only applicable to multiparas and in patients where the cervix is at, or can be brought down by traction to the vulvo-vaginal orifice. This view is based on a misconception of the anatomy of the pelvis and a lack of knowledge of the technics of the operation. In our series, eighty-six were nulliparas and twenty-six were virgins. In how many the cervix was at its normal height we did not record, as that factor never entered into our decision to do the operation. In normal adult virgins and nulliparas the vagina is a capacious and dilatable organ. In virgins it has been necessary in some cases to cut the hymen and do an episiotomy, and it also has been necessary to do the latter operation in a few cases when a previous perineal repair has been performed. We have never resorted to a Schuchart incision to gain room. We feel that operation should never be done, except for a Schauta operation, and if the surgeon deems it necessary he had better employ the abdominal approach. No matter how high the cervix is situated, it comes immediately into the field of operation as soon as the utero-sacral and cardinal ligaments are ligated and severed.

In our technic, we employ certain steps to facilitate the removal of the uterus by the vaginal route in all types of cases. As soon as the cul-de-sacs are opened, we control bleeding by uniting the peritoneum to the vaginal mucosa and from this step to its conclusion, the operation is practically bloodless. We do not use clamps in any stage of the operation. Clamped tissues are likely to slough, and clamps take up room and are always in the way. We do not antevert or retrovert the body of the uterus into the vagina. To do so crowds the field of operation and what is more important, such a procedure carries the infected cervix up into the pelvic cavity. We ligate and cut the utero-sacral, cardinal ligaments and uterine arteries on both sides. This enables us to bring the cervix down to or through the vulvo-vaginal orifice. The round ligament, tube and ovary on one or the other side of the uterus are ligated and cut. When one side of the uterus is freed, it is rotated laterally and the tube, ovary and round ligament of the opposite side is ligated and cut and the uterus delivered, the cervix first and the fundus last.

We have presented this and previous reports in the hope that they will stimulate greater interest and more general employment of vaginal hysterectomy.

SUMMARY

Complete vaginal hysterectomy is recommended as the operation of choice in removal of the uterus, the danger to be feared from incomplete operation being stump cancer. In a series of 2427 vaginal hysterectomies, six cases of mortality occurred, a percentage of ¼ of 1 per cent. Case reports of these six instances are presented.

The operation was generally performed under spinal anesthesia, although rectal avertin and local

anesthesia with sedation were successfully used. One of the many advantages of this method is a lessened convalescent period. Indications for the operation are fibroid tumors of the uterus, prolapse of the uterus associated with vaginal prolapse, hyperplastic or fibrotic uteri with excessive bleeding in or about the menopause or extensively lacerated, ulcerated and infected cervices. The operation was successfully performed on 86 nulliparas and 26 virgins.

TABLE I

INDICATIONS	
Fibromyoma of the uterus	1456
Fibromyoma of the uterus fixed to anterior abdominal wall by previous operation	20
Fibromyoma of the uterus and bilateral chocolate cysts of ovaries	12
Fibromyoma of the uterus and ovarian tumors	76
Fibromyoma of the uterus and chronic bilateral tubo-ovarian disease	63
Hyperplastic or fibrotic uteri with excessive bleeding in or about the menopause	322
Prolapse of uterus	359
Prolapse of uterus with carcinoma of cervix	9
Prolapse of uterus after an interposition operation	8
Badly lacerated diseased cervix in or about the menopause	63
Adenomyoma of the uterus	8
Chorionepithelioma of the uterus	1
Carcinoma of body of uterus	22
	2427

CASE REPORT

Case I. Patient operated on for fibromyoma size of a three-month pregnant uterus, causing menorrhagia and metrorrhagia. She also complained of urinary incontinence, due to a urethrocele which was repaired at the same time. Convalescence was uneventful until the fifth day when nausea, vomiting and abdominal distention developed. Temperature rose to 103.2 F., pulse 120, peristalsis was sluggish. A high compound enema and an ampule of Pitressin relieved the distention. Saline and glucose were given intravenously; this was followed by a violent chill, temperature rose to 105.4 F., pulse became imperceptible. A medical consultant was called and in spite of heroic cardiac and vasomotor stimulation, patient continued to fail and died the same day. It was concluded that she died from anaphylactic shock. Upon examination, the intravenous apparatus was found to be contaminated, numerous old blood clots were found in the tubing.

Case II. Patient suffering from essential hypertension was operated on for multiple fibromyoma and large rectocele. The urine was normal before operation. After operation the patient suffered complete urinary suppression. Taking into consideration the possibility of having ligated both ureters, a cystoscopic was performed twenty-four hours after operation and No. 5 catheters passed up both ureters to pelvis of kidneys, but not a drop of urine was obtained. Blood transfusion and everything possible to stimulate urinary excretion were undertaken without success. On the third day, she became comatose, later on developed a consolidation at the base of the left lung and died on the ninth day.

TABLE II

ADDITIONAL OPERATIVE PROCEDURES	
Removal of one or both tubes	268
Removal of one or both ovaries	279
Plastic operation on urethra for incontinence	116
Posterior colpoperineorrhaphy	1246
Repair of complete perineal tear	7
Preliminary episiotomy	94
Removal of Bartholin cyst	11
Repair of inguinal hernia	18
Repair of umbilical hernia	12
Appendectomy	18

Case III. Patient operated on for a multiple fibromyoma, the size of a four-month

pregnant uterus, requiring morcellation. Her recovery was uneventful. Temperature reached normal on the third day and remained so. She was permitted out of bed on the tenth day and was taken suddenly with severe pain in the chest, dyspnea and cyanosis. She was immediately returned to bed and died. Upon autopsy a pulmonary embolus was found.

Case IV. Patient operated on for fibromyoma and left ovarian cyst. Convalescence was uneventful. Patient was dressed to go home on the twelfth day, went to the lavatory, collapsed and died before any medical aid could reach her. Upon autopsy a massive pulmonary embolus was found.

Case V. Patient operated on for uterine prolapse, urethrocele, cystocele and high rectocele. At operation there was encountered bilateral endometriosis of both ovaries, which were densely adherent to rectum, sigmoid and pelvic structures. The tubes and ovaries were removed with uterus. Her convalescence was stormy from the very beginning. On the third day, she began to show signs of peritonitis, which became progressively worse and she died on the fifth day.

Case VI. Patient operated on for complete procidentia and large rectocele. On the fourth day, the temperature and pulse became elevated. She complained of severe pain in the perineum, which upon examination was found badly infected and suppurating. The patient could not void and was catheterized at regular intervals. She began to complain of severe pain in her bladder, the urine became purulent and upon examination mixed organisms were found. In spite of intravenous sodium sulfathiazole, blood transfusions and bladder and vaginal irrigations, the temperature became more septic, casts appeared in the urine, urine output diminished and she died on the ninth day.

RÉSUMÉ

L'opération de choix pour l'ablation de l'utérus est l'hystérectomie vaginale complète. Les opérations incomplètes entraînent le danger d'un cancer du moignon. Dans une série de 2427 hystérectomies vaginales, il y eut six décès, une mortalité de ¼ d'un pour cent. Ces six cas sont rapportés en détail.

Les opérations en général furent faites sous anesthésie rachidienne; dans quelques cas, on eut recours à l'avértine par voie rectale aidé d'anésthesie locale. Cette méthode abrège la durée de la convalescence. L'opération est indiquée dans les cas de fibromes de l'utérus, de prolapsus de l'utérus compliqué, de prolapse du vagin; dans les cas d'utérus hyperplastiques et fibrotiques accompagnés d'hémorrhagie excessive ou proches de ou pendant la ménopause, dans les cas d'ulcération et d'infection du col de l'utérus. On opéra avec succès 86 nullipares et 26 vièrges.

SUMARIO

El autor recomienda la histerectomía vaginal total, como la operación de elección para la extirpación, el único peligro que debe ser precavido es cáncer del muñón. En una serie de 2427 casos de histerectomia vaginal, 6 casos de mortalidad ocurrieron, esto es ¼ de 1 por ciento. Los seis casos de mortalidad son relatados por el autor.

La operación fue, generalmente, ejecutada con la anestesia-raquidea, aún cuando la anestesia-rectal-avertin, la anestesia local y sedativos fueron empleados con éxito.

Este método tiene la ventaja de acortar el período de convalecencia. Indicaciones para la operación son tumores fibroides del útero, prolapso-uterino, asociado con prolapso de las paredes vaginales, hiperplasia o fibrode-uterino con hemorragia excesiva durante o en proximidad de la menopausia y laceraciones extensivas, ulceraciones e infecciones del cuello uterino. La operación fue ejecutado con éxito en 86 multiparas y en 26 virgenes.

Выводы

При уделении матки рекомендуется тотальная влагалищная истерэктомия, так как при частичном удалении всегда существует возможность рака шейки. Из 2427 случаев влагалищной истерэктомии было шесть случаев, т.е. 0.25%, смертности. Даны истории болезни этих шести случаев.

Операция была обыкновенно произведена при спинальной анэстезии, хотя прямокишечная инфильтрация авертином совместно с местной анэстезией и общими успокаивательными средствами также была успешно применена. Одним преимуществом этой методы является сокращение периода выздоровления. Показаниями на операцию являются: фиброма матки, пролапс матки и влагалища, гиперпластическая или фиброзная матка при черезмерном кровотечении во время климактерии и значительные разрывы, язвы и заражение шейки. Операция была успешно произведена на 86 нулипарных и 26 девственных пациенток.

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SIR BENJAMIN COLLINS BRODIE

(Continued from page 36)

What manner of man was this who basked in the light of medical eminence during most of the first half of the nineteenth century? Small, slight in stature, he had keen grey eyes and a mobile and sensitive mouth. His movements were vigorous and brusque, his manner, abrupt. True kindness and sympathy were his in full measure, as may be seen in the lines he penned to an almost unknown student: "I hear you are ill. . . . No one will take better care of you than I; come to my country house till you are well." And the student spent almost two months with him. Aided all his life by influential friends and family connections, Brodie had dignity, grace and tactful self-effacement, which went far toward making him the acknowledged Nestor of the medical profession in London for 30 years.

Brodie was far from confining his interests to his own profession. First of all, he loved noble literature. He was a student of physiology and the experimental investigation connected with it. He protested against the importation of religion into scientific questions. Although pointing out difficulties in Darwin's teachings, he accepted the principle of evolution. He stressed the importance of imagination and its training by education. Brodie believed that the mental faculties of men and animals are similar in kind, but differ in degree. The acquisition of knowledge is essential. It is a means of exercising and developing the intellectual faculties. This should be done in the traditional way by the study of languages. In other words, the end of study is not the acquisition of facts, but discipline of soul and mental faculties. A true aristocrat, Brodie was convinced that the laboring class should be given only a rudimentary education.

Brodie practiced what he preached. In regard to surgical note-taking he said: "You should investigate cases for yourselves; you should converse on them with each other; you should take written

(Continued on page 77)

The Unstable Spine: Discogenetic Syndrome Treatment with Self-Locking Prop Bone Graft*

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THE multiplicity of therapeutic measures advocated for the relief of low back pain bears witness to the fact that there is no standard acceptable treatment and no unanimity of opinion concerning its etiology or cure.

Internists prescribe salicylates; dentists remove teeth; nose and throat specialists remove tonsils; chiropractors twist the spine; physical therapists apply heat and massage and improve the posture; surgeons remove the appendix; gynecologists remove pelvic organs; proctologists take out hemorrhoids; urologists massage the prostate; orthopedists apply casts and braces, others divide fascia, do hamstring operations, stretch the limbs under anesthesia, massage or section the pyriformis muscle, inject tender spots with novocaine and fuse the spine. Many other procedures are recommended. Their enumeration only adds to the confusion of treatment of the lame back.

Goldthwait,[21] an orthopedic surgeon, first called attention to herniation of the nucleus pulposus as a cause of low back pain. During the past decade enthusiasm for removing this portion of the anatomy has become increasingly popular.

Some enthusiasts have gone so far as to say that the only justification necessary for "disc" operation is a history of recurring attacks of low back pain with or without radiating pain into one or both lower extremities. If x-ray shows a thinned out disc in these cases, then removal of the disc or discs should be performed.

Various surgeons have reported brilliant results. But already the field seems to be overworked. Discouraged, disabled and weary patients are being seen who are not relieved, and some have been made worse following disc operations. The problem has not been solved, or else many patients are being operated on for "discs" when they should have received some other type of treatment.

The author performed his first "disc operation" eight years ago. Since then he has followed the problem with a great deal of interest, trying to select cases very carefully. Approximately one hundred cases have been treated by surgery. Many of these have had the combined operation of disc removal and spinal fusion. In addition to his own cases, the author has observed a goodly number of patients treated elsewhere.

In seeking a solution to the problem and an explanation for the failures and recurrences, a number of questions presented themselves. First of all, why is it that so many cases of back pain can be relieved by so many different types of treatment? It is well known that in many clinics most back cases are treated by a particular method which is decidedly different from the method used in some other clinic. The results obtained by either method must be satisfactory

* Presented at the Ninth National Assembly of the International College of Surgeons held in Philadelphia, Pa., Oct. 3–5, 1944.

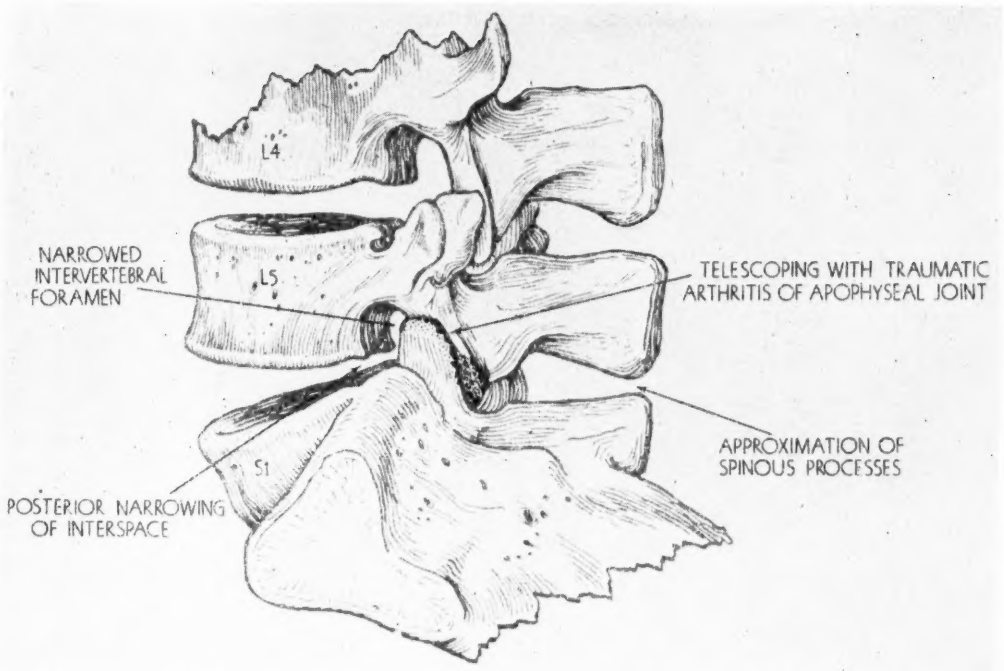

Fig. 1. The findings illustrated represent pathology which occurs in the unstable spine with discogenic syndrome. There is collapse or telescoping of the vertebrae with closer approximation of the bony structures. Degenerative and arthritic changes take place in the apophyseal joints, the intervertebral space becomes narrowed and the intervertebral foramens are constricted. There are also intraspinal protrusions of soft tissue into the canal.

or else the method would be abandoned. In certain clinics casts are used almost routinely. In other clinics they are rarely ever used. In some clinics spinal fusions are frequent. In others they are rare. In some clinics it is believed that the intervertebral disc should be removed in almost all cases. In other clinics it is believed that almost all cases can be treated conservatively, based on the hypothesis that there must be some abstruse common factor that was applied in all of the various types of therapies. If the basic fundamental of each type of treatment could be understood, then it might be possible to plan a type of treatment which would embody all principles and would cure the unusual and difficult cases that were not being permanently relieved by any single method, whether conservative or radical.

Why is it that frequently a patient is relieved following a disc operation, yet little or no protrusion is found and there is no demonstrable nerve root pressure? How can a "concealed disc" cause nerve root irritation and produce pain? Why is it that almost all cases after disc surgery are expected to have a "weak back"? Why is it that so many of these patients have recurrence with severe symptoms? Some say it is because all of the disc was not removed or that additional discs should be removed. Some say that 80 per cent of disc lesions are multiple.

That herniation of the nucleus pulposus is a clinical entity, there can be

no doubt. By x-rays, a good history and a careful physical and neurological examination, its location can be accurately determined. Visualization of the spinal canal is not considered necessary.

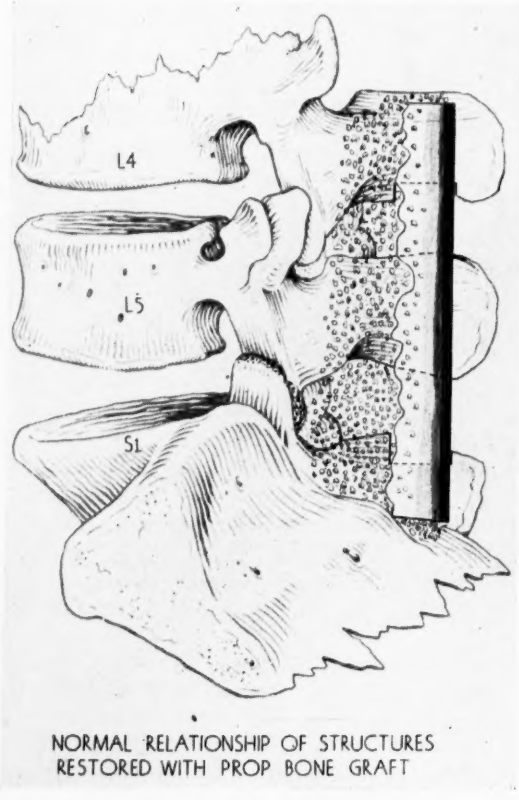

Fig. 2. By means of a self-locking prop bone graft the telescoped vertebrae are held in normal position after having been elevated. Hyperextension of the spine is corrected, motion in painful apophyseal joints is eliminated and nerve root pressure is relieved. The bone graft, reinforced with medullary bone, immobilizes, gives massive support and permanent fixation in the corrected position is assured.

Anyone who has ever seen a large protrusian removed can have no question that nerve root pressure was present and that surgery was required for its removal. The patient's relief from pain is frequently dramatic.

In attempting to approach the root of the problem many things must be considered. That disease, metabolic disturbances, poor posture, malnutrition, stress and strain of vigorous exercise or injury can bring about destructive or degenerative changes in any part of the body, there can be no doubt.

In man's phylogenetic development there have been morphological changes in the skeleton due to processes of evolution. One of these changes occurs in the low lumbar spine and is due to man's evolution from the horizontal to the erect posture. As yet, the protective mechanism has not become perfect and this portion of the body is therefore weak.

Through various influencing factors, as enumerated above, the spine may become weak and unstable. The most vulnerable location is at the lumbosacral junction.

When destructive or degenerative changes take place, there is relaxation of the supporting ligaments. The intervertebral disc is compressed or loses its turgor and eventually it becomes thinned out. Increased strain is thrown on the apophyseal joints, which in turn become narrowed, traumatic arthritis finally developing in these joints. The spinous processes approach each other and the interspinous ligament is torn or is absorbed. The normal lumbar lordosis is increased. The posterior longitudinal ligament relaxes and bulges toward the spinal canal. It may tear and allow protrusion of the nucleus pulposus. The ligamentum flavum is crushed, it becomes fibrosed and thickened and may prolapse forward into the canal. Most important of all, the intervertebral foramen is narrowed and the corresponding nerve root at that location may be constricted or it may be compressed by swelling, by the nucleus pulposus, by the ligamentum flavum, by callus or

hypertrophic new bone formation about the apophyseal joints. There is traumatic arthritis of the apophyseal joints and motion of their articular facets is therefore painful. Compression at the fifth lumbar interspace occurs frequently because of the fact that its intervertebral foramen are smaller and its nerve roots are larger than at any other location.

These changes are familiar to all of us and if the conception of removing pressure on the nerve roots and articular facets is correct it is easy to understand that rest, supports, fasciotomies or any treatment that improves posture and relieves strain will in many cases afford relief.

Spinal fusion will relieve strain by preventing motions in the painful arthritic joints. If at the time of fusion a flexion body cast is used, or the spine is kept straight on a boarded mattress until fusion takes place, nerve root pressure may be relieved. On the other hand, if correct posture is not maintained, or if the patient becomes ambulatory and bears weight too soon, and if the spine goes into further extension during the process of fusion, there will be nerve root pressure or irritation. This explains the cases that have recurrence of pain and disability following spinal fusions.

Removal of a large herniated nucleus pulposus will undoubtedly remove pressure and will relieve pain, but will the relief be permanent? How may one explain the relief of pain that follows the removal of a small nucleus fragment or a "concealed disc"? Is it due to removing during exposure a thickened and prolapsed ligamentum flavum which was also causing pressure? In addition, a painful interspinous ligament, painful soft tissue about the articular facet, or a part of the facet itself may have been removed. Furthermore, these patients spend a period of recumbency in bed. Usually they are taught to improve their

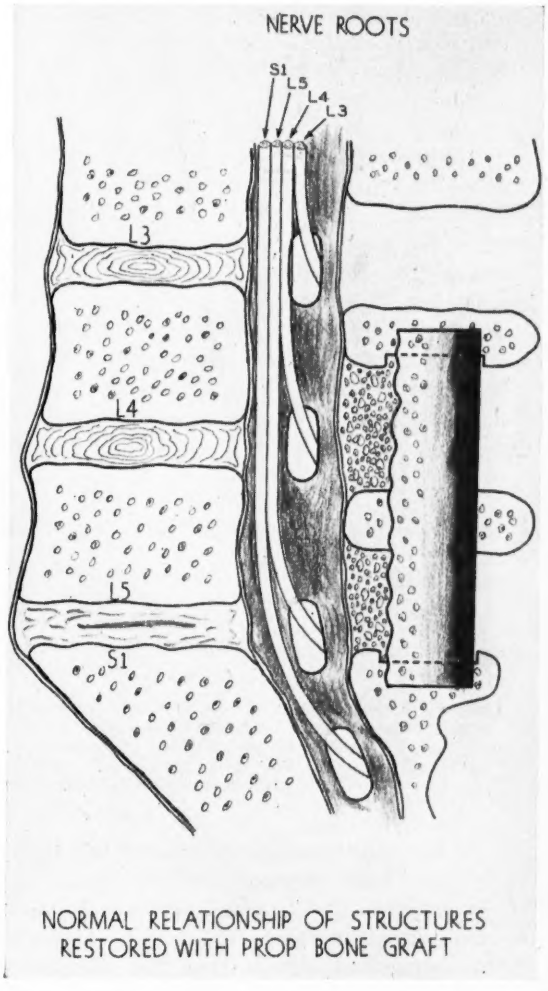

Fig. 3. This tracing schematically illustrates a sagittal section of the spine. The intervertebral space at L5 has been narrowed, the posterior longitudinal ligament is relaxed or torn, there is protrusion of the nucleus pulposus into the spinal canal. The ligamentum flavum is prolapsed forward into the canal and the fifth lumbar intervertebral foramen has been narrowed. The combination of these three factors produces nerve root constriction with radicular neuritis of the first sacral, and to a lesser extent, of the fifth lumbar nerve root.

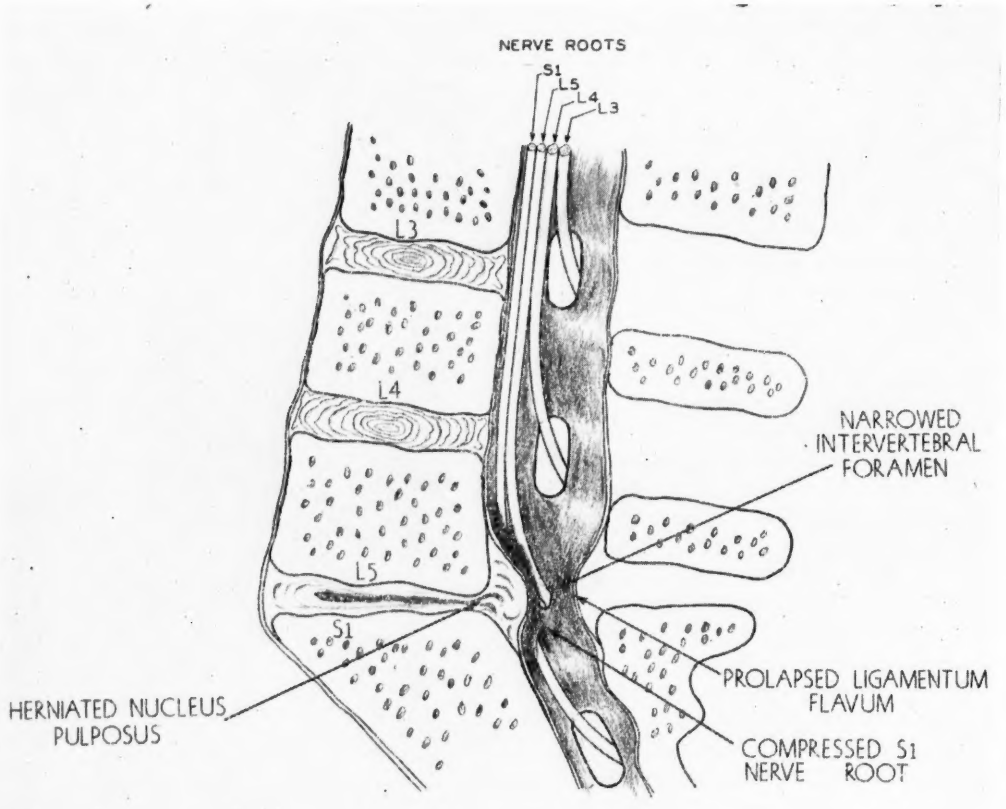

Fig. 4. The compressed structures illustrated in Fig. 3 have been relieved. The nucleus pulposus has been removed, the posterior longitudinal ligament is tight. The ligamentum flavum on the affected side has been removed, the one on the opposite side has been drawn taut and the normal size of the intervertebral foramen has been restored. The prop bone graft elevates the bony structures and holds them permanently in position, thus reducing the likelihood of recurrence of symptoms.

posture and usually they are fitted with a low back support which tends to straighten the lumbar spine. A still further adjuvant to removal of a small or concealed disc is that the disc may have been fairly well curretted and there may be some degree of fibrous ankylosis between the vertebrae bodies which helps to stabilize the unstable spine and diminish pain in the apophyseal joints.

Disc operations admittedly are destructive procedures. While the immediate results are gratifying (often surprisingly so), are the results permanent? Has there been a sufficiently large series of cases studied with an accurate follow up over a sufficiently long period of years? The author is inclined to believe that most reports of end results have been too recent after operation to be conclusive.

What is to prevent further telescoping of the vertebrae with further narrowing of the intervertebral foramen and recurrence of nerve root pressure after the usual disc operation? Especially may

this be true when a large part of the disc has been removed by currettage. May not the patient eventually be worse because of the operation than he was before it was done?

Should we not properly consider the "slipped disc" as secondary and incidental to the real pathology which is increased lumbar lordosis with mechanical instability of the spine, arthritis of its joints and nerve root irritation due to pressure and altered body mechanics? If this then be true, treatment logically should be directed toward the source of the trouble and not limited to one part of the syndrome that is causing immediate symptoms.

Most cases should, and the author believes *can* be relieved by conservative measures as previously outlined. Certainly a reasonable period of conservative treatment should be tried in all cases. In the difficult and intractable cases surgery is necessary. Fasciotomies and minor surgical procedures should be performed when indicated.

For treatment of the severe cases an operation has been devised that is primarily intended to restore the altered body mechanics and to permanently maintain its normal relationship so that recurrence of symptoms does not take place. This type of treatment is **con**structive and not **de**structive in nature.

Breck in 1943 reported a similar but less extensive procedure. In his operation the spinous processes of two vertebrae are separated by a small mortise bone graft. We have done this operation, reinforcing the graft with medullary bone, on several occasions. It is believed that it is an advantage to use a

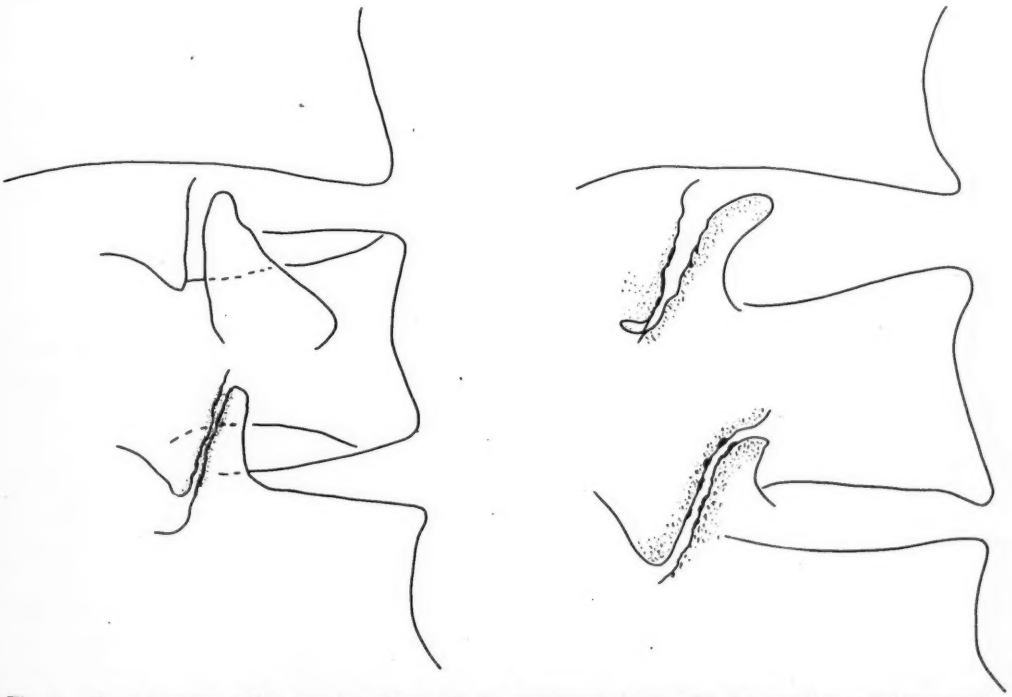

Fig. 5. X-ray tracings which reveal prolapse of the apophyseal joints with degenerative and hypertrophic arthritic changes. Motion of such joints causes pain.

larger, heavier graft which separates the processes widely. In addition, we reinforce this graft with medullary bone and immobilize three or four instead of two vertebrae.

Bosworth in 1942 described his "clothespin" graft for use in treating laminal defects and cases of spondylolisthesis. He referred to a similar graft reported by Dr. Alexander Gibson of Winnipeg, Canada. The basic principles of both of their grafts are similar to the one described by the author and no claim is being made to priority. The author did not know about Bosworth's or Gibson's work before writing this paper. Similar methods of grafting may have been previously described but none were found in literature available to the author at the present time.

OPERATIVE TECHNIC

The operation is done under low spinal block anesthesia and it is done in two phases. The first phase is performed with the patient lying supine on the table with pillows under the pelvis. The lumbosacral region is exposed through a vertical incision over the spinous processes. At the same time the left leg is flexed at the knee and a second operating team removes the bone graft from the upper end of the tibia. The spine is exposed by subperiosteal dissection and it is tested for instability by grasping the spinous processes with heavy forceps. Usually excessive motion at the involved area can be detected. Sometimes the amount of motion is surprising. Both sides of the laminae are exposed by hand with a special, very sharp, flat chisel. Mallet blows are thus eliminated. A thin layer of bone is curled outwards so that raw bone is exposed. Bleeding is minimal. The interspinous ligaments are removed and the proposed area for grafting is freshened in preparation for the bone graft.

By this time a graft of approximately four inches long has been removed from the leg. A small handful of medullary bone also has been removed from the upper end of the tibia with a curette and the incision in the leg has been closed. The patient is now turned on his left side and the spine is flexed by drawing the knees and shoulders towards each other. It is remarkable to see how widely the spinous processes have now become separated. The base of the interspinous ligament is grasped with forceps. The center of the ligamentum flavum is incised and this structure is removed with laminae dissectors stripping it outward to the apophyseal joint. With the spine acutely flexed it is found that the canal has been exposed in a space between the laminae approximately the size of the end of one's thumb. This is abundant space for exploration and it is not necessary to remove any bone. Special laminae spreaders have been made but these are not usually necessary.

Removal of the interspinous ligament greatly facilitates exposure. The dura and nerve root is retracted. If a herniated nucleus pulposus is found, it is removed and the disc is explored for loose fragments with polyp forceps or a curette. No attempt is made to curette away firm disc tissue. If no free nuclear material is found in the canal, the disc is not explored unless there is a rent in the posterior longitudinal ligament. A second or third intervertebral space may be explored if the symptoms are questionable.

The coagulating current and a special suction tip should be available during the operation but usually these are not necessary. Measurements are now made with calipers and a flexible ruler.

The piece of bone removed from the tibia should be thick and heavy, with all of its cancellous bone attached. It should be fully three-fourths of an inch wide. With the motor saw, it is cut to proper length. With twin saws and a burr on the Luck saw, a notch one-half inch deep and three-sixteenths of an inch wide is quickly cut in either end. With the burr or a special router an oblong slot is cut in the center of the graft to slip over the intermediary spinous process. The notches and the slot are made with minute accuracy in accordance with the previously recorded measurements. The graft is a mortise which will lock together three or more of the spinous processes. The upper and lower spinous processes are undercut with a rongeur to receive and lock the graft in place. If prepared properly the graft should fit accurately.

To place it in position it is necessary to forcibly flex the spine by bringing the knees and shoulders closer together. After the graft has been forced over the intermediary spinous process and into the undercuts of the processes at either end, releasing of the acutely flexed body snaps the graft in position where it is locked firmly and cannot be dislodged. By this means the spine is held permanently in the flexed position. Exaggerated lordosis has been corrected. Between the spinous processes, underneath the graft on the unexplored side, and around the ends of the graft, bone chips and medullary bone are packed until the entire space is filled. Sulfanilimide powder is dusted into the wounds before closure. The patient is returned to bed with no external support.

RATIONALE OF OPERATION

It is known that compression fractures of the vertebrae are reduced by extension of the spine. The anterior longitudinal ligaments are strong and on being stretched they pull the body of the vertebrae back into its normal position. It is known that in all "lame back cases" with nerve root irritation there is a "flat back." The normal lumbar lordosis is obliterated and the patient holds the back flexed to splint the spine and to relieve irritation of the apophyseal joints and the nerve roots. If the anterior longitudinal ligament, when made taut, restores the continuity of the vertebral bodies in fractures, is it not reasonable that by tautening the posterior longitudinal ligament, we can restore the continuity of the intervertebral disc? If a patient flexes his spine with muscle spasm to relieve low back and radiating pain, is it not reasonable in treating the patient to place the spine in the flexed position and hold it there permanently to prevent recurrence of pain? This is the principle of the self-locking prop graft operation. We know that the patient relieves his pain by flexion of the spine. I have seen two cases in which the only way the patient could secure rest and sleep was by hugging his knees close to his chest. With relaxation and straightening of the body after falling asleep, he was awakened by pain and again had to resume the above-described position in order to obtain relief.

We further know that posture, casts, braces or any other procedure that holds the spine in a flexed position will in a large number of cases give relief; and we know that so frequently when support is removed, there is a recurrence of pain. The prop bone graft, in cases in which it has been used, has given what appeared to be immediate relief. So far, in our experience, there has been no recurrence of pain. Mechanically, the graft widely separates the

spinous processes. The anterior portion of the intervertebral disc becomes the fulcrum of leverage. The intervertebral space is widened, especially on its posterior aspect, the posterior longitudinal ligament is stretched and, theoretically, any bulging of the disc is reduced. The articular facets are elevated, and these telescoped arthritic apophyseal joints are restored to their normal position. Pressure which has been exerted on their degenerated articular cartilages and roughened joint spaces is removed. The ligamentum flavum is stretched and any forward protrusion or prolapse into the canal of this structure is reduced. Last, the intervertebral joint space is enlarged, and by the combination of reducing all intrathecal pressure or irritation, nerve root pain is relieved. The graft should be heavy and strong to prevent breaking. Sufficient medullary bone should be used to insure a large strong buttress of bone that firmly unites to each other the posterior arches and processes of the unstable vertebrae. If this can be accomplished, there should be permanent protection with no further collapse or telescoping of these vertebrae and no recurrence of pain.

POSTOPERATIVE CARE

No immediate postoperative support is necessary. The patient lies in bed on a boarded mattress and is instructed to keep his back flat and not to twist the spine. He is allowed to "roll like a barrel" from side to side and may assume a position in bed with the shoulders and knees slightly elevated. As soon as wound healing is safe, he may become ambulatory. One of our patients (a thin, small young man) insisted that he felt normal, and he was allowed to be up and to walk about on the fifth day after surgery. Ordinarily, it would seem that a period of ten to twelve days postoperative rest in bed would be more judicious. It is wise to furnish all patients with a low back support which has been reinforced by straight vertical bars in the back of the appliance. This support should be used as a constant reminder to hold the back flat and in the correct posture. This is particularly true in large, heavy individuals with pendulous abdomens. The patient is cautioned against lifting, bending, stooping and any excessive spine movements for at least two months following surgery. For two more months restricted activities are advised. In four months

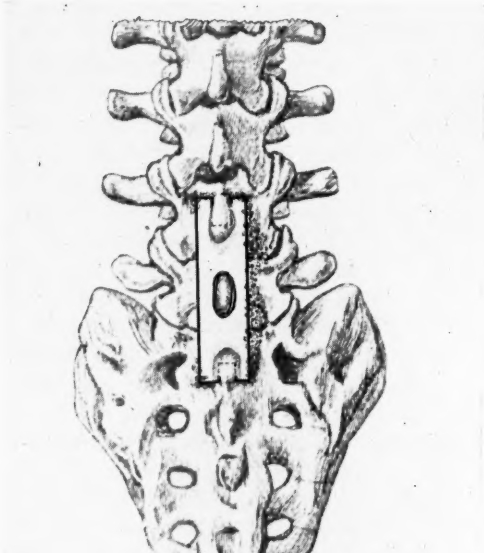

Fig. 6. Posterior view of spine showing self-locking prop bone graft in position. It should be noted that the space between L5 and the saerum has been enlarged. The graft is reinforced with medullary bone.

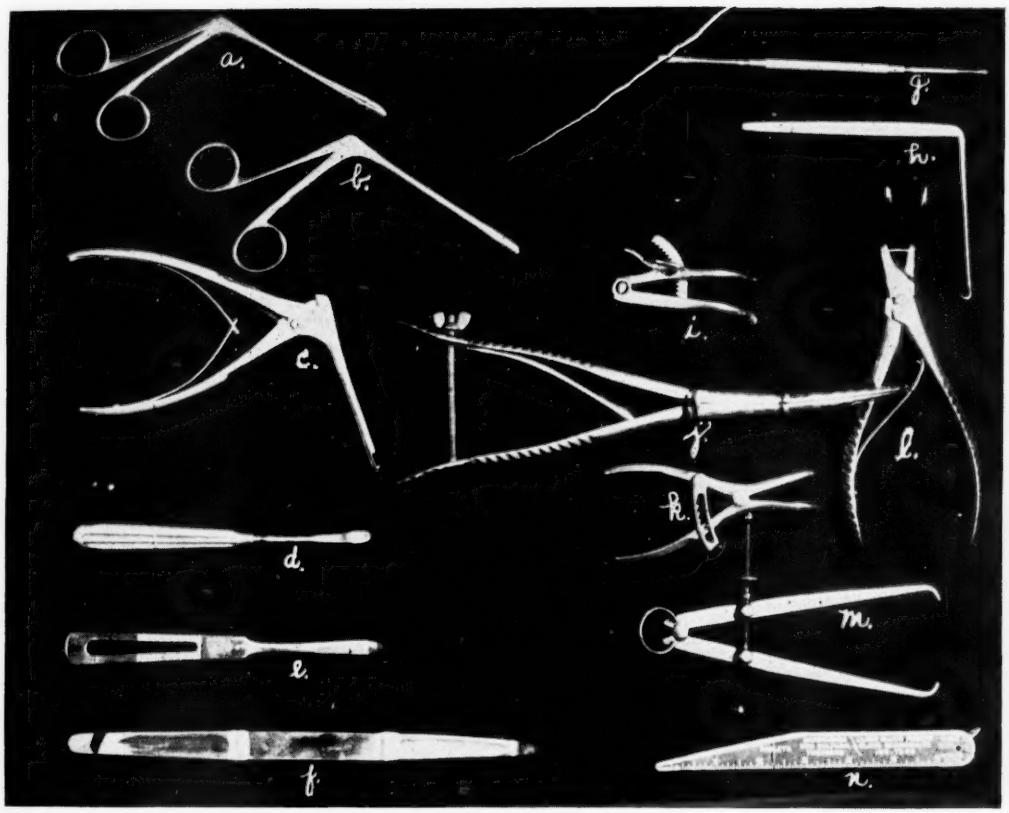

Fig. 7. Special instruments used in prop bone graft operation. (a and b) Polyp forceps. (c) Bone punch to make intermediary hole in bone graft after drilling. This instrument is also used to remove portion of lamina when necessary to expose nucleus. (d, e and f) Lamina dissectors. (g) Straight dura or nerve root retractor. (h) Right angle nerve root retractor. (i, j and k) Special lamina separators. (l) Rongeur used to undercut spinous processes. (m) Caliper. (n) Rule.

after the operation, or when x-rays reveal firm bony union, the patient may consider himself reasonably safe and may engage in semi-normal activities. In one of our patients, a young, vigorous, and rather irresponsible individual, the graft was fractured one month after operation. This caused localized pain which lasted about forty-five minutes. Since then he has been entirely comfortable, and there was apparently no unfavorable influence exerted on his progress.

RESULTS

During the past seven months fourteen cases have been treated by this method.* The cases have been too few and the time has been too short to justify positive conclusions. In only four of these fourteen cases was there a typical large disc protrusion that unquestionably caused nerve root pressure. In five other cases the disc lesion was

* All patients had typical symptoms of disc lesions which had been present for a period of months or years. All patients had had a thorough period of conservative treatment.

questionable and the fragments removed were too small to account for nerve root pressure. Five cases had no disc lesion. All cases had demonstrable unstable spines, hypertrophy of the ligamentum flavum, a narrowed intervertebral foramen or other evidence of nerve root pressure. All patients were relieved. Is it not reasonable to assume that elevation of the bony structure played a large part in relief of symptoms?

EVALUATION OF FINDINGS IN 14 OPERATIVE CASES

	Instability	Ligamentum Flavum	Nucleus Pulposus
Brannon, L. P.	///	///	/
Chapman	//	///	/
Craig	///	///	0
Faust	///	//	///
Goff	///	0	0
Guignard	//	//	//
King	//	/	0
Prince	///	/	/
Simmon	///	//	///
Tensel	///	/	0
Turner	///	//	////
Williams	//	//	/
Williamson	//	//	/
* Brannon, C. A.	///	//	///

* It is very striking that the only patient in this series who has had a recurrence of symptoms is the one in which the prop bone graft was prepared but was not used. All other patients are getting along well.

There has been no operative mortality and no operative infection. In one large, heavy individual there was a small area of superficial pressure necrosis at the lower end of the wound due to lying on his back too long after operation.

SUMMARY AND CONCLUSIONS

A self-locking prop bone graft of the spine has been devised to aid in the permanent relief of local pain and radicular neuritis. The graft is used with or without exploration of the spinal canal as the symptoms indicate.

The rationale of the method is not new. It embodies a number of well-established principles that have previously been used in similar means of treatment.

The operation is **con**structive in nature and it is not a **de**structive procedure.

By exploring the spinal canal all possible nerve root pressure is relieved and by separating the spinous processes with a prop graft the structures are restored to their normal relationship and are held permanently in this position.

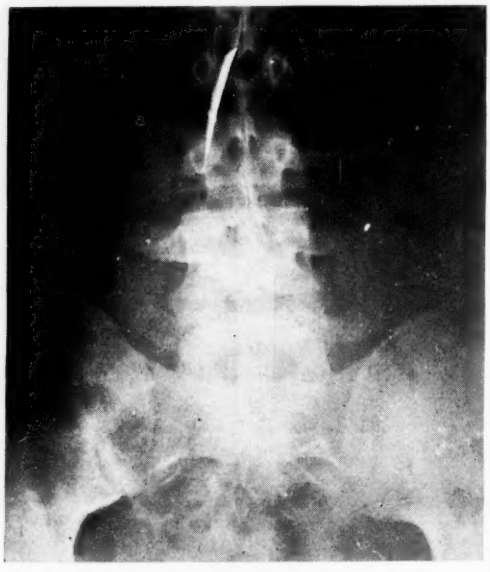

Fig. 8. Postoperative x-ray showing prop bone graft in position—notice widening of the fifth lumbar interspace.

The operation does not require extensive and shocking surgery. The period of hospitalization is no longer than that required for the usual disc operation. Casts, braces and heavy postoperative supports are not necessary. The period of convalescence is shortened, and the patient may return to work or to normal

activity in shorter than the usual length of time.

Sufficient experience has not been gained to justify conclusions. Years of observation may be necessary. Results have been sufficiently impressive to warrant a report of the procedure in the hope that interest may be stimulated.*

Unforeseen complications may develop which may militate against this approach to the problem of low back pain or radicular neuritis that is not relieved by conservative measures. It may be that the graft will absorb under constant pressure in the erect posture; it may be that disc disintegration will continue to occur. Other complications may arise. Some may argue that the bone graft adds unjustifiable length of time to the operation. This type of surgery can be performed as quickly as the usual disc operation. No more time is consumed, and surgical shock is less in preparing and placing the bone graft than in exploring and curetting the intervertebral disc or discs.

In addition to "disc suspect" cases in any portion of the spine, it is suggested that the operation may have a field of usefulness in old fractures, unstable spines and any other spine afflictions where it is desirable to fuse the spine to relieve and protect spinal nerve roots from pressure.

For this reason it is the author's opinion that every surgical removal of a herniated nucleus pulposus should be followed by spinal fusion in the flexed position to relieve the actual and to protect a potentially unstable spine.

Grafts of any length can be made by this method. Similar designs for bone grafting have been made previously and no claim is made to priority for the graft.

* Since presenting this paper eight additional patients have been treated by this method. All cases have been relieved.

RÉSUMÉ

Un greffon osseux de la colonne vertébrale se fermant de soi-même est présenté par l'auteur pour le soulagement de la douleur locale et de la névrite radiculaire. Le greffon s'emploi avec ou sans exploration du canal vertébral selon les symptomes présentés par le malade.

L'exploration du canal nous permet de remédier à toute compression des racines nerveuses. La séparation des apophyses épineuses au moyen du greffon souteneur permet de rétablir et de maintenir les rapports structuraux normaux.

L'opération est constructive et n'entraîne pas de grande et choquante chirurgie. Elle n'exige qu'une période d'hospitalization et de convalescence courtes. Des attelles plâtrées, des supports postopératoires ne sont pas nécessaires. L'opération ne demande pas plus de temps que l'opération ordinaire sur les disques.

L'absorbtion du greffon occasionnée par la pression constante due à l'attitude érecte ou à la continuation de la désintégration discale sont des complications qui peuvent survenir.

La technique est utile dans les anciennes fractures et dans certaines affections de la colonne vertébrale dans lesquelles il est désirable de fusionner la colonne afin de remédier et de protéger les racines nerveuses spinales de toute compression nocive. L'auteur exprime l'opinion que toute ablation d'un nucleus pulposus doit être suivie d'une fusion vertébrale afin de soulager et de prevenir l'existence ou la survenance d'instabilité vertébrale.

SUMARIO

Un injerto-oseo por broche automático ("a self-locking prop bone graft"), ha

sido empleado en la columna vertebral para mejorar y curar el dolor localizado y la neuralgia radical. El injerto se usa con o sin exploración del canal vertebral según las indicaciones sintomáticas.

En la exploración del canal vertebral toda presión existente sobre raíces de nervios puede ser levantada, separando las apófisis vertebral por un injerto de apoyo o sostén; los tejidos son repuestos normalmente y sanan permanentemente en dicha posición.

La operación es de reconstrucción y no necesita intervención quirúrgica prolongada ni chocante. El período de hospitalización es corto y la convalecencia con el uso de moldes, broches y pesados apoyos postoperatorios no son necesarios. La operación puede ser hecha con la misma rapidéz que en la operación de disco.

Las complicaciones más comunes, la más posible es la absorción del injerto bajo presión constante en postura derecha o tal vez continuación de la absorción del disco.

Esta técnica es utilizable en fracturas viejas, vertebras movedizas o en cualquier condición vertebral que requiere inmobilizar la columna vertebral para mejorar y proteger la raíces de los nervios espinales contra la presión.

Es la opinión del autor, que la extirpación de la hernia del nucleus pulposus debe ser completada con la fixación vertebral en posición de flexión para mejorar y para evitar la instabilidad vertebral.

Выводы

С целью постоянного облегчения местной боли радикулярнаго неврита была изобретена самозамыкающаяся пересаженная костяная стойка позвоночника. В зависимости от симптомов эта стойка применяется с исследованием или без исследования спинного канала.

При исследовании спинного канала все нервные корни освбооождаются от давления, а раздвижка позвоночных отростков при помощи пересаженной стойки не только восстановляет нормальное отношение этих частей, но также и держит их постоянно в этом положении.

Операция эта конструктивная и не требует очень экстенсивной и шоковой хирургии. Она дает возможность сократить срок пребывания в больнице и выздоровления, и гипс, корсет и тяжелые послеоперационные стойки ненужны. Операция производится так же быстро, как и обыкновенная дисковая операция.

Возможными осложнениями являются: абсорбция пересаженной кости из-за постоянного давления в вертикальном положении и продолжающаяся дэзинтеграция междупозвоночного диска.

Этот способ полезен в старых переломах, при неустойчивом позвоночнике и во всех тех спинных болезнях, где желательна спайка позвоночника с целью облегчить или защитить корни спинных нервов от давления. По мнению автора, спинная спайка необходима после каждого хирургического удаления грыжевого nucleus pulposus для того, чтобы укрепить действительно или потенциально неустойчивый позвоночник.

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SIR BENJAMIN COLLINS BRODIE

(Continued from page 63)

notes of them in the morning, which you may transcribe in the evening; and in doing so you should make even what are regarded as the more trifling cases the subject of reflection."

His reflections on the prize system then in vogue sound modern: "I would limit the prizes to one class, founded on cases. . . . A man wants a prize. He gets books, reads up the subject; and this kind of work keeps him out of the dissecting room and the wards of the hospital. Yet these are the only places where he can get any knowledge that he can apply to practice, and learn to observe and think." Brodie was convinced, too, that obtaining a competency formed a part, and only a small part, of professional success. His greatest contribution to surgery was the inauguration of the conservative principle, especially in orthopedic surgery, in which he was a forerunner of Liston, Syme and Fergusson. A pioneer in subcutaneous surgery, Brodie made many improvements in surgical instruments and appliances.

A letter from the author's collection, reproduced below, shows his zeal in promoting his fellow surgeons whom he considered worthy.

Private

14 Saville Row
August 10, 1844

My Dear Sir

I should have sooner thanked you for the letter which I received from you some time since, & for the information which it contained, if it had not been that, in one way or another, I have lately had

(Continued on page 84)

Clinical and Roentgenologic Diagnosis of Diaphragmatic Hernia

L. J. GARIEPY, B.S., M.D., F.A.C.S., F.I.C.S.,
AND J. H. DEMPSTER, M.A., M.D.
DETROIT, MICHIGAN

ROENTGENOGRAPHY, in patients with symptoms of the chest and abdomen, has greatly increased the number of reported cases of diaphragmatic hernia. Yet there is a surprising number of unsuspected cases. Patients with distressing symptoms, more or less severe, constant or intermittent, continue for many years, sometimes under the care of physicians and even undergoing operations of various kinds without the diaphragmatic hernia being diagnosed preoperatively or being discovered at operation. It is for this reason that detailed reports of such cases have practical value.

The earliest reported cases (Ambrose Paré, 1610; Hildanus, 1646; Riverius, the first congenital diaphragmatic hernia, 1698; Morgagni, 1769; Andrew, the first case of paraesophageal hernia, 1903, and others) were post-mortem findings. According to Arnsperger, before 1908 the diagnosis had been made only ten times in living persons.

The incidence of hernia of the diaphragm has been repeatedly increased due to improvement in technic and to increased attention to the subject. Harrington [11] illustrated this by pointing out that at the Mayo Clinic, from 1900 to 1925, 30 cases were recognized clinically (19 treated operatively) while from 1925 to 1933, 147 cases were recognized (60 treated operatively). In a later article, carrying the series through 1939, he stated that in the last fourteen years the diagnosis was made twenty times as frequently as in the previous eighteen years. MacMillan (1920) reported three cases in 15,000 radiographic examinations in U. S. Army Hospital No. 1. Béclère reported two cases in 5000 examinations. While engaged in routine examinations of the fundus of the stomach, Morrison [17] (and Healy) studied its varying shape in upright, prone, supine, lateral and oblique positions when filled with barium meal. The investigation was made with the express purpose of finding a means to earlier diagnosis of malignancies of the stomach. The study disclosed an incidence of 42 cases of congenital hernia of some portion of the fundus of the stomach through the esophageal hiatus in some 3500 gastric cases.

Turner [20] noted 673 articles on gastric herniation added to medical literature between 1930 and 1939. The most important of these included the group in which herniation occurred through the esophageal hiatus. According to Turner, some degree of herniation of the stomach through this hiatus was found in 3.5 per cent of 1500 upper gastro-intestinal examinations.

Harrington, by examination of the diaphragm in the course of abdominal operations, found the muscular ring snug about the esophagus in 65 per cent. In 35 per cent, at least one finger could be inserted between the muscular ring and the esophagus and in 5 per cent

three fingers could be inserted. Special roentgenologic examinations in the last group of cases "occasionally" demonstrated hernias not recognized by preoperative clinical or roentgenologic examinations. Both Morrison and Harrington concluded that the incidence of hernia of the diaphragm would increase with the attention given to its diagnosis.

The diaphragmatic hernias with definite onset related to a trauma to the region are the more readily diagnosed, depending, of course, upon the extent of the injury to the diaphragm and the suddenness with which the organs are sucked up into the thoracic region, what organs are admitted, and to what extent. Even in traumatic cases, however, there may be a lapse of months and even years after penetrating injury or blunt trauma before correct diagnosis is made and treatment instituted. Of 127 soldiers wounded in the last war who were later found to have hernia of the diaphragm, 40 per cent had symptoms for from one to fifteen years before the diagnosis was made.[12] The nontraumatic cases, congenital and acquired, likewise include a wide range of variations and types, including those due to lack of development of the diaphragm which may threaten the life of the newborn infant, and the slowly acquired types due to smaller defects and structurally weakened areas in the diaphragm such as the most common herniations through the esophageal hiatus.[2, 4, 17, 18] In a large proportion of the cases of congenital origin, the patients reach an adult age before diagnosis is made. Hedblom called attention to two cases of adults with congenital absence of half of the diaphragm.[13]

Whether the terms applied are eventration of the diaphragm or hernia—true or false, acquired or congenital—the diagnosis and treatment of these cases call for special consideration and carefully selected therapy.

Many of the patients continue for a period of years in obvious discomfort without receiving the attention necessary for proper diagnosis. Even those cases of very gradual onset and mild and indefinite symptomatology may be precipitated into a dangerous condition of threatened or actual obstruction and strangulation of a part demanding immediate surgical intervention under very difficult and unfavorable circumstances. Better to make certain of the diagnosis and operate under the more favorable circumstances of election.

Abbott[1] urged attention to the early diagnosis of true hernias of the diaphragm (those with hernial sac) by means of fluoroscopic examination with the patient lying on back and on abdomen. If the patient then takes a deep breath and strains, the detection of any small hernial sacs of the diaphragm are favored. Ball[3] suggested the rapid distention of the stomach with gas, under fluoroscopic observation, by giving the patient a Seidlitz powder. Whether referring specifically to these or similar suggestions, Hedblom[15] questioned the wisdom of depending exclusively upon special technic for roentgenologic demonstration. He further pointed out (discussion following paper by Woolsey[21]) that the diagnosis cannot always be made by the roentgen rays. Spontaneous reduction may occur at times, and if this occurs at examination the hernia will, of course, escape detection. A herniated intestinal loop may not fill with contrast material or may be of such size and location as to be overlooked or hidden by other shadows. Also herniated omentum and spleen are not seen roentgenologically.

Improvement in diagnosis would undoubtedly occur by the simple expedient

of including diaphragmatic hernia more frequently in the enumeration of tentative diagnoses to be ruled out or substantiated. Andrews [2] mentioned a case in which the presumptive diagnosis of the clinician was confirmed by the radiologist by having the patient bend forward several times, causing the sac to fill with barium and protrude above the diaphragm.

The clinical picture varies widely. The symptoms may be largely referable to the digestive tract, and the patient may have committed himself to attempts at relief by selective dieting and soda regimen self-imposed, or may have been kept by his physician on an "ulcer" diet. Harrington [8] stated that twenty-one patients in a series of 161 had been operated on previously without relief of their symptoms and were completely relieved by operations for hernia of the diaphragm: eleven had had cholecystectomy; four, cholecystostomy; three, appendectomy; two, pyloroplasty; and one, gastroenterostomy. Other erroneous diagnoses included in the total series were: gastric ulcer, duodenal ulcer, intestinal obstruction and hyperacidity. Cardiac disease, cancer of the esophagus, and stricture of the esophagus were also included in the series. Intrathoracic pressure and discomfort frequently lead to diagnoses of various heart conditions or to strictures and malignancy of the esophagus, and tumor of the lung. Note the position of the stomach in the case here reported (Figs. 1 and 2) where there is contact with both heart and lungs. In these cases with intrathoracic symptoms, the patients have, in many instances, been subjected to long continued medical treatment, mostly mis-

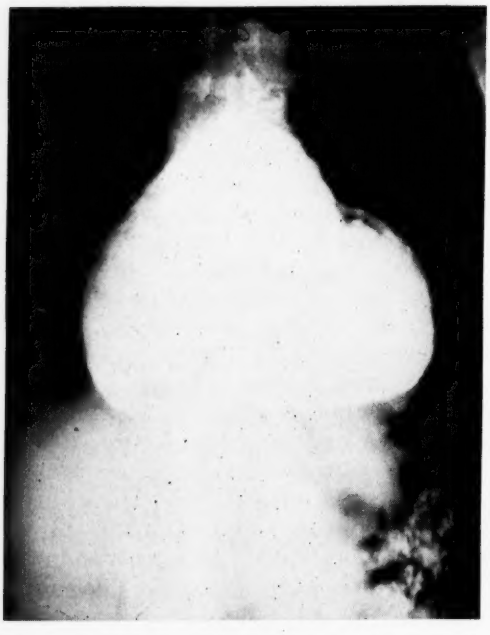

Fig. 1. The post-cardiac position of the stomach when filled with the standard two tumblers of the barium opaque meal.

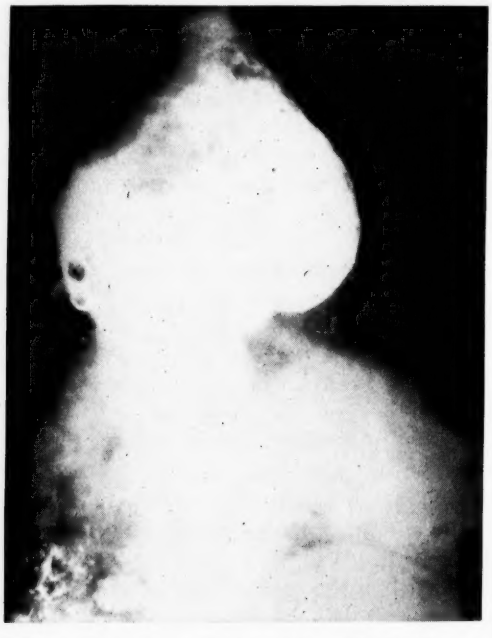

Fig. 2. The stomach partly empty. The position of the stomach is above the diaphragm.

directed, or to self-imposed habits of posture, especially after eating, and restricted activity. The variation of the symptoms or their severity with posture is one of the most significant observations that can be made in arriving at a clinical diagnosis of hernia of the diaphragm.

While the traumatic cases have been more common in adult males, the congenital and acquired types occur in both sexes with equal frequency and have been discoverable from infancy to old age. In Harrington's series of 467 patients, 227 were males, 240 females; youngest, 7 months; oldest, 82 years.

For detailed embryonic and anatomic studies, and for a more complete classification and discussion of the various types of diaphragmatic hernia, reference is made to comprehensive and numerous monographs on the subject. (References appended, the most recent and complete being that by Harrington.[11])

The main purpose of this communication is to emphasize the importance of keeping on the alert to diagnose cases of diaphragmatic hernia and to offer another instance of long duration of symptoms which escaped diagnosis and treatment until late in life.

CASE REPORT

The patient, a widow 62 years old, consulted one of the authors (L.J.G.) on July 1, 1944. She complained of pain in the lumbar, as well as discomfort throughout the thoracic region, which had been present for the fifteen years, becoming more severe of late. Pain originated approximately at the costal vertebral angle and radiated to the entire left side. It became sharp in character and at times very severe. For the past twenty-five years she had been using alkalies, principally baking soda, which seemed to give relief. Her appetite was good, but she could eat only a limited quantity of food before she became distressed and before the pain became severe.

Her past history revealed that in 1918 she had a cystic ovary removed; aside from that she had never had any confining illness.

Laboratory findings: blood pressure, systolic 240, diastolic 180; N.P.N. 46.5; blood sugar 111.7; Kahn, negative. The blood examination showed hemoglobin 90 per cent; red blood cells 4,650,000; white blood cells 9,500; polymorphonuclear 56; lymphocytes 38; mononuclear leukocytes 6; sedimentation rate was 41 mm. (Wintrobe and Lansberg). Temperature, pulse and respiration were normal. Practically a normal clinical laboratory finding except for the rise in blood pressure.

A tentative diagnosis was made of hypertension with possible diaphragmatic hernia.

X-ray examination of the gastro-intestinal tract revealed a marked distortion of the anatomy of the abdominal viscera. Following the contrast meal, a fluoroscopic examination of the abdomen failed to show the filled stomach. Instead, a large, dense, "water bottle" shadow was found covering the heart. The initial appearance was that of a large hypertrophied or dilated heart. A radiograph with patient in the prone position showed the stomach entirely above the diaphragm. The stomach was apparently reversed in its herniated position. The fundus was on the right side of the thorax, the pylorus towards the left as may be seen in the radiograph of the partially emptied stomach. As the stomach emptied, the cardiac silhouette began to appear.

An interesting lateral exposure of the chest (preoperative) showed the angulated esophagus making a sharp turn to the cardia located close to the thoracic vertebrae. Evidently the cardia did not close, which accounted for the quantity of the opaque meal seen in the esophagus in the preoperative radiograph (as well as in the postoperative radiograph with the stomach below the diaphragm in the abdomen). The heart was anterior to the stomach. As a result there was the so-called pigeon-breasted thorax. The actual measurements were transverse, 26 cm.; antero-posterior, 27 cm. (In the average normal female chest the ratio of the lateral diameter to the antero-posterior diameter just above the diaphragm is 3:2.)

The twenty-four hour examination of the

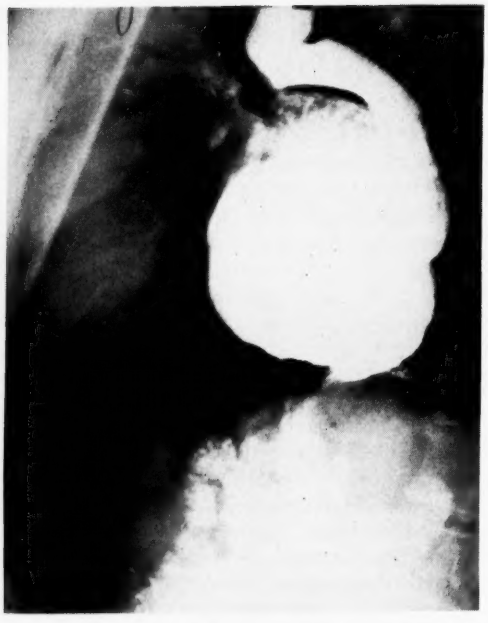

Fig. 3. The lateral radiograph shows the post-cardiac position of the stomach and reveals the angulation of the esophagus in the lateral position.

Fig. 4. The transverse colon with the splenic or upper portion incarcerated into the hernial opening.

abdomen showed the cecum in normal position. The hepatic flexure of the colon was below the crest of the right ileum. The transverse colon followed a diagonal course across the abdomen in such a way that the splenic flexure was incarcerated through the herniation aperture. The haustrations appeared well formed. The descending colon, sparsely filled, passed directly to the sigmoid.

The patient was sent to Mt. Carmel Hospital and kept under observation for a few days. On the second day in the hospital she was taken to the operating room and a phrenectomy was done on the left side, which allowed for 1½ in. to 2 in. more space to work during the operation, which followed three days later.

Operation: An upper left rectus incision was made about 10 in. long, extending from the xiphoid cartilage down. Upon opening the abdominal cavity, the stomach and splenic flexure were found in the thoracic cavity. These were brought down into position. The opening in the diaphragm easily admitted the entire fist. It was impossible to close this opening completely. Partial closure, however, was accomplished with mattress linen sutures, making it as tight as possible, and then suturing with linen the fundus of the stomach to the hiatus. All bleeding points were sutured and the wound was closed in layers in the usual manner without drains.

In subsequent x-ray examination, after the described operation, the liberated stomach is seen suspended in the abdomen. Figure 4 is a postero-anterior view. The lower end of the esophagus, which assumes a curved or tortuous shape, is seen to contain some of the contrast meal. The pylorus is near the lower end of the stomach.

The patient made an uneventful recovery and returned to the office on August 28, at which time an x-ray examination was made of the stomach in its normal position in the upper abdomen. The long axis of the stomach is parallel with the long axis of the body. This was the position in which we finally affixed the stomach. Seen two months after

the operation, her appetite was good and she had gained weight. She stated that she felt better than she had ever felt in her life. In fact, she had no complaints whatever. Her blood pressure had dropped to systolic 170, diastolic 120.

SUMMARY

Proper use of the x-ray will establish the diagnosis of diaphragmatic hernia, in which symptoms may not be easily distinguished from those of other abnormalities and diseases of the abdomen or of the chest. Examples are given of cases in which patients have passed from one physician to another without the diagnosis having been made, even when the hernia is a massive one. Operations for the removal of gall bladder or appendix have even been performed without discovery of the hernia. A case of successful operation upon a diaphragmatic hernia is presented, and the presentation is accompanied by pre- and postoperative x-ray studies.

RÉSUMÉ

Les rayons-x peuvent établir le diagnostic de hernie diaphragmatique dans les cas ou les symptômes pourraient porter le clinicien à croire à l'existence d'autres anormalités ou à la presence de maladies abdominales ou thoraciques. L'auteur cite des cas qui passèrent de médecins à médecins sans que le diagnostic fût établie même dans des cas de hernies volumineuses. Des opérations pour l'ablation de la vésicule biliaire et pour l'enlèvement de l'appendice furent faites sans que l'opérateur s'aperçut de l'existence de la hernie diaphragmatique. L'auteur presente un cas de hernie diaphragmatique opérée avec succès. La présentation fût accompagnée de filmes pré- et postopératoire se rapportant au sujet.

SUMARIO

El uso competente del rayon-x puede establecer el diagnóstico de hernia diafragmática, cuando los síntomas no aclaran esta diferenciación de otras abnormalidades y enfermedades del abdomen y del pecho.

Ejemplos son citados en que pacientes han pasado de un médico a otro sin determinar el diagnóstico, aún cuando la hernia es de tamaño imponente.

En verdad, operaciones del apéndice y de la vésicula biliar han sido practicados sin descubrir la presencia de la hernia diafragmática. Un caso operado con éxito es presentado, demostrando los estudios hechos por rayon-x antes y después de la operación.

Fig. 5. Postoperative view of the stomach in the abdominal cavity.

Выводы

Правильное рэнтгеновское исследование поможет поставить диагноз в тех

случаях диафрагмовой грыжи, в которых симптомы мало отличаются от других ненормальностей и болезней живота и груди. Даны примеры случаев, которые были исследованы одним врачом за другим без постановки правильнаго диагноза, даже когда грыжа была очень массивна. Даже были совершены операции над желчным пузырем или для аппендецита и все-же грыжа не была обнаружена. Представлен случай успешной операции диафрагмовой грыжи и до- и после-операционные рэнтгеновские данные.

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SIR BENJAMIN COLLINS BRODIE

(Continued from page 77)

more business in my hands than I could well get through.

I some time since placed your name on a list to be considered by the Council of our College with respect to the fellowship—but I cannot answer for what twenty three other persons may do when the question comes before them for their determination.

At all events, I have no doubt that if some members of the College in your neighborhood were to sign a memorial to the Council recommending you for the fellowship there would be no difficulty in the matter.

If this cannot be easily accomplished, I think that a letter addressed to myself from one, or two, or more of the more influential nobility or clergy or gentry in your part of the world would be very useful.

The new list of fellows must be put forth before the end of this matter and the plan that I have mentioned can be accomplished the better.

Yours truly,
B. C. Brodie

P.S. What is especially required is that the Council should be informed that you are especially called in as a consulting surgeon in your district.

This is only one of the kindnesses among many that were bestowed on his fellow men, his colleagues and students by Sir Benjamin Collins Brodie, whose humanity, as well as his skill as a surgeon, made him one of the outstanding English surgeons of the past century.

Obviously times, modes and men have not changed much despite the tremendous advances made in the sciences from the period of Brodie to the present day.

THIS IS YOUR COUNTRY TO HAVE AND TO HOLD

KEEP HER FOREVER SAFE AND STRONG

BUY MORE AND MORE WAR BONDS AND STAMPS

Cesarea Extraperitoneal en Distocias Provocadas por las Partes Blandas de la Pelvis y en Mujeres Infectadas*

(Indications for Extraperitoneal Cesarean Section in Certain Cases of Dystocia of the Soft Parts and in Infected Women)

BERNARDO J. GASTÉLUM, M.D.
MEXICO, D. F.

(PART II) *

La energia de la contracción uterina valuada durante el trabajo, nos sería útil para presumir si no la feliz terminación del parto cuando parece existir inextensibilidad de los tejidos de la pelvis, cuando menos para eliminar a la musculatura uterina como una de las causas determinantes del entorpecimiento del trabajo, pero las investigaciones efectuadas hasta ahora, se han limitado a determinar la potencia que necesita desarrollar el útero para romper las membranas, dilatar el cuello y expulsar a través del canal vaginal al feto.

Dentro de la falta de extensibilidad de las partes blandas, hay que incluir ciertas histeropexias practicadas con mala técnica y que inmovilizan la pared anterior, impidiéndole su normal desarrollo durante el embarazo, y aquellos úteros que conservan cicatrices de rupturas en un parto anterior, porque estas heridas, asegura Winter, jamás curan per-primans y dejan en cambio, cicatrices conjunctivas facilmente desgarrables. Scipiades, en partos a termino, en estas condiciones, encontró que en un 40 por ciento se presenta la rutura uterina, y en un 18.75 por ciento en los prematuros.

Naugebauer recopiló cincuenta y ocho casos de estenosis vaginal en que hubo que practicar la cesárea. Para Winter, las estenósis musculares anulares entre el orificio externo y el anillo de contracción, ofrecen muy raras veces un obstáculo invencible y permanente a la salida del feto, pero cuando la dificultad es insuperable, hay que intervenir por la vía abdominal.

Todavía me queda por referir, otras más de las dificultades que presentan las partes blandas a la salida del feto, cada una de ellas reclama un tratamiento especial, por la vía natural, en tanto el entorpecimiento no llega a ser imposible. Como la indicación de la intervención para cada caso haría más prolija y extensa esta nota, reservo su estudio para un trabajo posterior, porque entre ellas hay temas de impresionante interés, como la aplicación del forceps de Kjelland, en cabeza alta, la histerotomía de Bumm, en cuellos que no se dilatan, para referirme por ahora al tratamiento esencialmente quirúrgico, que reclaman aquellos casos en los que el feto no puede nacer, se pretende que lo haga vivo y existe infección, por las manipulaciones vaginales, ya que no se dá importancia a los obstáculos que oponen las partes blandas, hasta que estos se tornan imposibles para la expulsión del feto, corriendo peligro la madre de la misma manera que el niño.

* Editor's note. The change in printing establishments prevented the concluding half of Dr. Gastelum's paper from appearing in the last issue of the *Journal*.

Cuando el feto vivo no puede salir por la vía vaginal, hay que sacarlo por la sección del abdomen y del útero. Esta operación que principia en la mitología cuando "Hermes por orden de Zeus, abrió el vientre de Semele, perecida en las llamas, y extrajo el niño de siete meses, después de lo cual Zeus, lo encerró por una sutura en sus caderas llevándolo hasta la madurez"; y que ha dado motivo al mayor número de meditaciones quirúrgicas, constituyendo el documento-histórico más abundante de vicisitudes en cuanto a la muerte de la parturienta, ya que en toda época se ha apreciado por encima de la existencia del hijo la de la madre; pareció encontrar su verdadera solución con la era antiséptica y el perfeccionamiento de la técnica. Mas tales exactitudes cientificas, no han bastado para quitar a la cesárea ese peligro que le es propio en cuanto a una probable infección y que no consiste solamente en la amenaza del exterior, común a todas las intervenciones quirúrgicas, y que puede prevenirse; sino a circunstancias adversas que provienen de la función fisiológica del útero. A evitar estas consecuencias desastrozas, vino el método de Porro, posteriormente, como resultado de una técnica correcta, de una hemostasia completa y del uso de un material adecuado, numerosos operadores, gracias a los perfeccionamientos obtenidos, lograron eliminar la operación mutiladora de Porro, conservando los órganos y la capacidad procreativa de ellos. Estadísticas acusiosas comprueban la reducción de la mortalidad en la cesárea, que con Georg Winter, ha sido aplicada a casos en los que hace muy pocos años, se resolvían por antiguos y brutales procedimientos obstétricos que si no provocaban la muerte de la madre y del feto, dejaban a la mujer en condiciones deplorables.

La cesárea intraperitoneal, tiene su aplicación ideal en los casos de integridad de la bolsa de las aguas, cuando la parturienta no ha estado sujeta a maniobras frecuentes y en dónde todas las exigencias quirúrgicas favorables se encuentran cumplidas. Más, no obstante, el adelanto logrado, el útero continúa siendo un órgano tan frágil y tan alterable en el puerperio, que el factor infección no ha podido ser excluído en aquellos partos de feto vivo, de rotura de la bolsa de las aguas y de maniobras vaginales en los que la intervención intraperitoneal se encuentra indicada. Harris y Brown, han llegado a concluir que seis horas después de rota la bolsa de las aguas con exploraciones repetidas, etc. los gérmenes invaden la cavidad alta del útero.

Naturalmente como dice Bondy, las investigaciones bacteriológicas, muy importante para el pronóstico, no son decisivas para una conducta firme, pues a pesar de encontrar en los genitales gérmenes muy diferentes y nocivos, estreptocos, estreptococos hemolítico, estafilococos, neumococos, colibacilo, etc., se desconoce su virulencia y la capacidad de resistencia de los tejidos y del organismo. Y para estos casos en que la operación cesárea intraperitoneal constituye un peligro teniendo presente las importantes indicaciones de Winter, en que es urgente salvar a la madre y con ella al niño, y en que no existe más obstáculo que la inextensibilidad de los tejidos blandos y el agotamiento de lo potencia uterina por una labor excesivamente prolongada, hay que recurrir a la cesárea extraperitoneal, cuya trascendencia no se ha estimado suficientemente, donde la aplicación de la operación intraperitoneal se hace extraordinariamente aventurada; porque es en el momento de abrir el útero, cuando ya contiene gérmenes, tomadas todas las

precauciones, que los microorganismos van a sembarse en la cavidad abdominal. Y es natural predecir que no sólo en los casos sospechosos o infectados, deberá recurrirse a la cesárea extraperitoneal, sino en todos los casos posibles planteandose con este tema, el mismo problema que con la extirpación extraperitoneal del riñón, que se ha abierto camino definitivamente, relegándose a hechos muy contados, la nefrectomía transperitoneal.

Pues bien la cesárea extraperitoneal como la nefrectomía lombar, es mucho más difícil; quitar el riñón siguiendo el camino transperitoneal puede ejecutarlo un cirujano de poca experiencia, pero por la vía extraperitoneal cuando los vasos son cortos y existen adherencias, se requiere habilidad. A pesar de estas dificultades, que confinan la nefrectomía a manos expertas, no han sido un obstáculo, para que se imponga como el método de elección. Algo semejante tendrá que sucedér con la cesárea extraperitoneal que reduce considerablemente el peligro de la infección, relacionada a la intervención misma, quedando relegada a las consecuencias propias del parto, fiebre puerperal, pues por la experiencia de Beisch se comprueba que aún infectado el tejido celular, hecho posible en este género de intervenciones, su peligro es sin disputa menor que la contaminación peritoneal.

Las dificultades fundamentales de la cesárea extraperitoneal son: el pliegue peritoneal superior, que se ve como si una linea transversal blanquecina, lo separara hacia abajo del tejido conjuntivo que es rojizo. Del modo de reflejarse el peritoneo, depende que se le pueda o no retirar; si a consecuencia de un largo trabajo dice Sellheim, se desplazó el pliegue de reflexión hacia arriba, separada la vejiga de la cara anterior del segmento y cuello, se nos presenta esta región, el pliegue se rechaza hacia arriba, por otra parte, si el pliegue de reflexión es muy bajo, por que el trabajo haya sido ligero, o por que la presentación no esté lo suficientemente encajada, entonces la separación y rechazamiento del pliegue peritoneal resulta imposible o muy difícil. Quizá, esto se deba también, asegura Doderlein, a diferencias anatómicas personales. Si se secciona accidentalmetne el pliegue, esto solo no impide el plan operatorio, ni significa un fracaso del método, basta cerrarlo por uno o dos puntos. Pues este accidente es muy distinto, a abrir la cavidad ampliamente en la intervención transperitoneal, con el peligro de que líquido infectado se derrame. Cuando no se encuentra el pliegue peritoneal, después de separar la vejiga de uno de sus bordes hacia adentro o sea su parte media, entonces no se está seguro del procedimiento extraperitoneal, pues solo cuando se le tiene a la vista, el procedimiento es correcto.

Afirma Doderlein categóricamente, que queda excluída toda lesión a la pared vesical cuando este desprendimiento se hace con cuidado y que no es necesario despegar la vejiga hasta la línea media o más allá de ésta, sino que es bastante desplazar hacia la parte media el borde levantado de la vejiga, lo que no es difícil, sin gran desprendimiento de su tejido de sostén. La parte del útero que queda visible por el hecho de llevar hacia adentro la vejiga, corresponde un poco hacia afuera de la línea media del útero; el desarrollo vascular es aquí un poco mayor que en la parte media, pero ésta en menor proporción que cerca de los bordes uterinos. Aquí surge la segunda dificultad: puede haber casos, en que existan una o dos gruesas venas, entonces se ligan y se cortan, hay otros en cambio, que los vasos son muy numerosos y por ellos no se pondrá abrir el útero,

porque la mujer moriría de hemorragia; todo lo que sea aproximarnos a los bordes uterinos es peligroso por el ureter y los gruesos vasos.

Otro hecho importante, en la cesárea, para evitar la hemorragia por inercia uterina, debe practicarse la intervención, cuando las contracciones sean todavía enérgicas. Y por último, la tercera dificultad que consiste, en que siempre que se abre la porción inferior de la matriz y principalmente en el método extraperitoneal, extraer el feto es menos fácil que en los casos en que se hace la incisión, más alta. Está recomendado usar el forceps como pinza, hay que recordar que lo corriente, en estos casos, es que la sangre salga en abundancia una vez abierto el útero y tal cosa estorba la aplicación, el forceps corriendo peligro la madre por la pérdida de sangre. La mano, en los casos posibles, sigue siendo para mí el mejor instrumento de tracción.

La intervención se conduce de la siguiente manera: Posición de Trendelenburg, incisión que parte tres o cuatro centimetros debajo del ombligo y termina sobre el pubis, incindimos la piel, y la linea aponeurótica hasta la grasa preperitoneal, hacer este corte cuidadosamente para no abrir el peritoneo y lesionar alguna asa de intestino que pudiera colocarse en este lugar. Vamos a la extremidad inferior de la herida, la que llegó hasta el borde superior de la sínfisis, ahora habrá que descubrir el utero, para ello estando la vejiga distendida con doscientos gramos de solución estéril y muy débil de azul de metileno, para lo que se deja en la vejiga un cateter en comunicación con un recipiente que contenga la solución; con una torunda de gasa, se busca el borde de la vejiga, prefiero el izquierdo por comodidad, hay que recordarque estamos en un espacio desprovisto en una extensión de casi cuatro centímetros de peritoneo, este espacio lo forma la parte inferior de la cara anterior de la vejiga, arriba tenemos el pliegue parieto vesical, vamos al lado izquierdo, borde, de este pliegue, y con la torunda de casa, los desprendemos hacia la línea media, dificilmente pasamos de ella porque está muy adherido, lo desprendido es fácil por la unión laxa del peritoneo a la vejiga.

No hay que usar en este desprendimiento ni bisturí ni tijeras para no herir la pared de la vejiga. Con este rechazamiento hacia la linea media de la vejiga descubrimos la porción inferior y anterior del útero, tener presente entonces, lo que ya dijimos sobre su vascularización, porque vamos abrir no exactamente la linea media de útero sino un poco afuera de esta linea, donde hay una irrigación mayor, no acercarse por inadvertencia cerca del borde uterino; ahora buscar el pliegue vesicó-uterino, arriba, que como dice Doderlein, se distingue como una linea transversal blanquecina, del tejido conjuntivo rojizo. Recordar en esta ocasión, lo que ya dijimos en cuanto al desplazamiento de este pliegue hacia arriba por un trabajo del parto efectivo o bien su no desplazamiento por una labor insuficiente, en este ultimo caso, el pliegue se encuentra abajo, lo que nos impide abrir extraperitonealmente el utero si es que no podamos llevarlo hacia arriba; lo que se facilita cuando es posible porque la unión del peritoneo a la porción inferior del utero es muy despegable, tal cosa se realiza también con una esponja a torunda de gasa. Con separadores se rechaza hacia el lado correspondiente la vejiga y arriba el pliegue peritoneal, a los lados los bordes de la herida. Se procede entonces a abrir el utero teniendo presente lo que dijimos de su vascularización, hacer una incisión vertical que empieza debajo del pliegue

peritoneal, prolongarla abajo hasta el punto extremo del utero descubierto. Se puede llegar al orificio externo de útero, se secciona pues toda la pared del cuello hasta la inserción vaginal, si se necesita.

La hemorragia como en toda cesárea es variable; hay veces que sale muy poca sangre, otras en que sale mucha, todo dependen del desarrollo de los vasos y de la inserción de la placenta; no preocuparse pretendiendo hacer una hemostasia imposible, sino evacuar el utero rapidamente, para ello quitar la posición de Trendelenburg y poner la paciente horizontalmente, si no se puede con la mano extraer al feto en presentación cefálica, usar el forceps como una pinza si viene de cara meter un dedo a la boca y llevar la cara a la linea media en la dirección de la sección, en otros casos se le puede tomar por los pies.

Hecho esto volver al Trendelenburg, hacer la limpieza del campo, inyectar en músculo uterino una o dos ámpulas de gynergeno, antes de abrir el útero deberá ponerse otra intramuscular, extraer cuidadosamente la placenta y membranas. Al sacar el feto los bordes del útero se retraen lo que se evita tomándolos con pinzas en T para que no se desgarre, tal cosa facilita la extracción de la placenta así como la sutura de la pared uterina para la que se empleará cátgut cromado de veinte días número dos, no comprender en la primera sutura ni la mucosa no la sero-musculosa sino unicamente el tejido muscular, cubrir esta sutura con otra sero-muscular, usar de preferencia puntos separados a una sutura continua. En seguida suturar como de costumbre los planos superficiales. Si hay peligro de infección mantener canalizado el tejido conjuntivo.

Considera Latzko que para facilitar la separación de la vejiga, con una torunda de gasa, se desvía hacia la derecha o izquierda, con lo que se consigue muy facilmente hacer visible el repliegue del peritoneo que la envuelve, pudiendo desviarlo integro hacia arriba. De esta manera queda descubierta una pequeña porción de la pared anterior del segmento inferior del útero. Mediante la desviación hacia arriba el repliegue peritoneal ya la desviación lateral de la vejiga, se puede descubrir una gran parte de la pared uterina. Entonces se incinde longitudinalmente la pared del cuello uterino, la cabeza si es lo que se presenta sale por presión o con el forceps. Evitar las lesiones de la vejiga, las desparraduras de sus venas producen hemorragias violentas muy difíciles de cohibir.

Edward G. Waters, del Hospital de Maternidad Margarita, de la ciudad de Jersey N. J., ha efectuado sesenta operaciones de cesárea supravesical extraperitoneal, sin un solo caso de muerte de la mujer. Su técnica hace posible la operación de aquellos casos que no puedan intervenirse por los métodos que acabo de describir. Waters procede así: Limpieza de la vagina, se pone en la vejiga un catéter y se llena con doscientos gramos de solución estéril coloreada con azul de metileno, tal cosa no solo tiene interés para estar seguro de los límites de la vejiga, sino que hace más visibles las facias, transversal y perivesical, la disección de estas facias, por otra parte, es más fácil con la vejiga vacía. Hágase una incisión en el abdomen que principia tres centímetros debajo del ombligo y termina sobre el pubis, incisión curva paramesial izquiera de Pfannenstiel; puede hacerse la incisión en la linea media; si es en la linea media dividir piel, aponeurosis hasta llegar al tejido celular supraperitoneal, evitar lesionar el peritoneo o alguna asa intestinal que pudiera estar colocada en esta región.

Identificar hacia abajo de la incisión el fondo de saco parieto-vesical, el vértice

de la vejiga se reconoce por el desarrollo abundante de sus vasos, este repliegue peritoneal parieto vesical se continua hacia abajo por la facia transversalis que termina en el pubis, este espacio esta desprovisto de peritoneo, es por donde se hace la talla hipogástrica, y tiene más o menos cuatro centimetros de longitud; debajo de la facia transversalis existe la facia perivesical que principia en el pubis, se dirige hacia arriba para colocarse detrás del repliegue parieto-vesical y se continúa sobre la vejiga que envuelve, cubre su vértice, su cara posterior, de ahí se refleja sobre la cara anterior del cuello uterino y cara anterior del útero, cubre su base para ir hasta la cara posterior donde la abandonamos porque ya no nos interesa; el peritoneo después de formar el fondo de saco parieto-vesical cubre el vértice de la vejiga que es casi una cara cuando está dilatada, la cara posterior hasta cierto punto, en donde se refleja para formar el fondo de saco vesico-uterino, luego la cara anterior del utero, su fondo, su cara posterior y aquí lo abandonamos porque como con la facia, ya no nos interesa.

Hago esta descripción de las facias, para que se comprenda bien el método de Waters, pues una vez descubierta esa porción de la cara anterior de la vejiga que no tiene peritoneo, y que está limitada hacia arriba por el repliegue parieto-vesical y a los lados por los pliegues peritoneales que se forman al cubrir la vejiga de arriba abajo dejando descubierta una gran parte de las dos caras vesicales laterales de la vejiga cosa que se quiso aprovechar para intervenir extraperitonealmente en la vejiga.

Se hace, sobre la vejiga cubierta por la facia transversal y la facia perivesical, una incisión longitudinal que comprende estas dos facias hasta la capa muscular de la vejiga que no debe lesionarse, y que principia arriba, inmediatamente debajo del repliegue parieto vesical y termina abajo hasta el punto más remoto que se haya descubierto de la pared uterina anterior, en seguida, se hace una incisión transversal equidistante de los dos lados de la extremidad superior de la incisión vertical, de modo que toda la incisión tiene la forma de una T. Divididas las dos facias, con el mango del escalpelo o con una torunda de gasa, se despegan de la vejiga y con ellas va hacia arriba el repliegue peritoneal, saco parietovesical, este despegamiento se sigue sobre el vertice de la vejiga hasta la cara posterior donde encontramos y desprendemos el repliegue vesico-uterino, para facilitar tal cosa, ir a buscar este repliegue en los bordes, parte superior izquierda, se sostiene la vejiga con una esponja o con gasa separándola con cuidado del tejido aerolar. Bien identificado el pliegue vesico-uterino se introduce por debajo de él un dedo de la mano izquierda, la bolsa parece un saco herniario y hay que mantenerla integra, tal cosa "es la parte más importante de la operación," se diseca el ligamento vesico uterino con el bisturí y se baja la vejiga detrás del púbis. Para esta disección de las facias hay que vaciar la vejiga. Ya tenemos la porción anterior del útero a la vista, Waters hace una incisión curva hacia arriba, recordando el peligro de acercarse a los bordes del útero, se puede hacer verticál; volver la vejiga a su sitio, suturar con cátgut cero, las facias, el resto de la operación se conduce como en la técnica precedentemente descrita.

Podemos hacer una demostración de esta intervención ya que no contamos, al menos que yo sepa, con una estadística amplia de cesáreas extraperitoneales practicadas en la república, el inteligente doctor Manuel Mateos Fournier, ha practicado cinco, cuatro por el método Latzco

Doderlein, y una por el de J. Ricci, Jefe del Servicio de Ginecologia y Obstetricia del Hospital Municipal de New York, usando la incisión de Pfannestiel, e incisión semilunar del segmento inferior del útero. Con el propósito llenar esta laguna, de en una comunicación posterior nos fundamos por ahora para estimarla en datos obtenidos del extranjero.

Bumm en 99 casos de cesárea extraperitoneal de los cuales en 46 la bolsa de las aguas tenia de rota más de doce horas, y con temperatura elevada, no tuvo muertes imputables a la operación, en 16 casos más que iba a operar extraperitonealmente no pudo hacerlo por no encontrar el repliegue peritoneal. Doderlein en 145 casos principiados extraperitonealmente, en ocho tuvo que hacer la cesárea intraperitoneal por hemorragias o no haber encontrado el plieque peritoneal. Stoeckel publicó 26 casos de cesáreas extraperitoneales con un sola muerte que se atribuyó a la anestesia requídea. Waters de N. Jersey, ha operado 60 casos sin una sola defunción. Las muertes por septicemia y por infección puerperal, no deben apartar la indicación favorable a esta operación, puesto que de todas maneras tendrían tales cosas que suceder. Por lo que se refiere a los niños vivos, también la estadística le es favorable, en 400 niños obtenidos por Doderlein por la vía extraperitoneal, hubo solamente 21 muertos a sea una mortalidad de 5.1 por ciento.

RÉSUMÉ

Les parties molles ainsi que Doderlein l'a indiqué, peuvent offrir un obstacle non négligible à la descente du fétus, et même empêcher toute délivrance par les voies naturelles. Les difficultés créés par les tissus mous parfois égalent celles offertes par les malformations du bassin osseux.

Quand l'accoucheur ne s'aperçoit pas de la dystocie due aux parties molles la parturiente est soumise fréquemment à divers examens et à des manipulations vaginales dans l'espoir de pouvoir effectuer la délivrance par les voies naturelles.

Cette prolongation inutile de l'accouchement favorise le traumatisme des tissus mous, entraîne l'épuisement de la mère, et parfois, met en péril la vie de la mère et aussi celle de l'enfant.

C'est dans ces cas infectés, oú il y a rupture du sac amniotique et asphyxie imminente du fétus, surtout si les contractions utérines sont vigoureuses, que la section, césarienne extra-péritonéale est indiquée.

L'auteur préconise la césarienne extrapéritonéale quand elle est indiquée. Eventuellement, elle deviendra, malgré ses difficultés techniques, l'opération de choix, ainse que l'emploi de la voie lombaire s'est généralisée pour les néphrectomies. Pour l'auteur, la voie extrapéritonéale offre des avantages incontestables.

SUMARIO

Se hace resaltar la importancia que las partes blandas de la pelvis tiene en el descenso del feto, y como pueden ser un obstáculo equivalente como asegura Doderlein, a las distocias de la pelvis ósea, para que el parto se haga difícil y en ocasiones imposible.

Como no se ha dado verdadera importancia a estos obstáculos de las partes blandas, creyéndose que el alumbramiento se podrá realizar, las parturientas sufren frecuentes exploraciones y maniobras vaginales, hasta que la imposibilidad del trabajo compromete la vida del niño, de la misma manera que la de la madre. Para estos casos de parturientas infectadas, con bolsa de las aguas rota y estando el feto amenazado de morir por asfixia, está indicada la cesárea extra-

peritoneal, que debe practicarse como toda cesárea, cuando las contracciones uterinas son todavía potentes.

Por otra parte, esta operación debería extenderse a todos los casos en que la cesárea esté indicada. Es una intervención más difícil que la que se practica a través del peritoneo, pero no obstante sus dificultades, tendrá que imponerse como procedimiento de elección, en forma semejante a lo que ocurrió con la nefrectomía por la vía lombar. La idea de Waters, aplicable a todos los casos, será la que prevalezca a las otras que han inspirado la cesárea extraperitoneal.

Выводы

Здесь особенно подчеркнуто значение болезненных родов *(dystocia)*, причиненболезненных родов *(dystocia)*, причиненных ненормальностями мягких тканей таза. Как Donderlein указал, они иногда так же важны как и ненормальности костнаго таза: они мешают проходу плода и даже делают невозможным нормальные роды.

Когда акушер не принимает во внимание состояние мягких частей таза, то роженница часто подвергается разным исследованиям и влагалищным манипуляциям в ожидании нормальных родов. Такое напрасное удлинение родов производит бо́льшую травматизацию родового канала и истощение матери, что иногда угрожает жизни и матери и ребенка.

В таких то, уже зараженных, случаях, где оболочки уже прорваны и создана опасность асфиксии плода, и в присутствии сильных маточных сокращений — в этих именно случаях существует показание на внеперитонеальное кесарево сечение.

По мнению автора такое сечение должно быть произведено во всех необходимых случаях. Он думает, что, несмотря на оперативную сложенность внеперитонеальнаго кесарева сечения, оно сделается таким же общеприятным методом, как сделалось поясничное удаление почки.

Во всех случаях которые прибегают к внепперитонеальному кесареву сечению, нужно руководиться идеей Waters'a, так как она применима ко всем случаям.

CANCER OF RECTUM AND COLON

(Continued from page 32)

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The staggering news that our beloved Past President and devoted friend

DOCTOR FRED H. ALBEE

died, reached us as we go to press. Further details in the next issue of the *Journal*.

International Board of Trustees
International College of Surgeons

Editorials

The Rôle of Medical Practice,

Its Share in the Success of the All-out War Effort, and Its Future Place in the Unfolding Problems of Life and Government

LOVE ONE ANOTHER. During the last four thousand years, there have been but two hundred sixty-eight years of peace, despite more than eight thousand peace treaties. (This was reported by the Society of International Law, London, June 18, 1943.)

This global war, this universal conflict we are witnessing, is trying the souls and sinews of the human being, friend and foe, because of its insane origin, needless sacrifices, savagery and cruelty, unparalleled in the world's history, staggering the imagination and blotting out all sense of perception, reasoning and judgment.

Out of blood and pain and mass destruction we are, with it all, salvaging acts of heroism and valor, faith and fervor, recognition of spiritual realities and moral principles. From the humblest fighter, in the ranks, to the most brilliant military and political leaders, liberal recognition has been accorded for their deeds, with promotion in rank and honors, while in shadows of battle, with the combat man, we see the spiritual chaplain, the surgeon and the nurse ministering to the needs of the fallen brother as never before in recorded organization of First Aid in the line of danger, with resulting salvation of life of the fighting men, ultimately returning to efficiency the largest percentage of the sick and wounded.

The man of medicine fits in the organization of military regulations and efficiency with full-hearted abnegation and devotion, for we never hear of acts of insubordination or failure of duty in the ranks of the medical services of our armed forces and the contribution of the medical coördination to war efficiency in the man power by the fundamentals of preventive medicine and sanitation and by the early application of methods of first aid and quick transportation of the sick and wounded to adequate facilities of nursing and medical care. These, all together, have stamped out major war epidemics in armies, civilian hardships and sickness in war torn communities, thanks to the alertness and selflessness of the man in white.

A large share of incalculable value is due to the medical profession in the service of the nation at war, and when peace again is God-given to us, let the men of our science be welcomed back to their labors to further the fruits of their experiences and research for the benefit of humanity.

The man of medicine belongs squarely to the army of defense against disease and preservation of the health and vigor

of mankind and, through science, of all animate life as well, hence the need and wisdom of segregating medical practice to the dignity and ethics traditionally inherent in the medical profession. He has and will always serve his government and fellow men in peace and war to the best of his ability but, if he is to survive destructive influences which seek to regiment his professional work to ideologies of political power, the progress of medical science will be retarded by subjugation of its essential liberties, its originality and genius, to limitations and restrictions based on false premises of equalization and the lure of justice under centralized power and control, engendering class distinction and favor under guide of Utopian protection.

The medical man's proficiency is incompatible with political token for service, and though his professional integrity does fit him with the highest quality of citizenship, in the annals of medical history we have instances of great service to the state by leaders of medical science, such as Rudolf Virchow, as High Councillor of the German Bundesrat, and that of the Chief Surgeon of the Grand Army of Bonaparte, Baron Larrey, of whom the Emperor spoke as "the most honest man he had ever known"; these are but two outstanding personalities among legions who have given quality of service in peace and in war while in political favor, without the sacrifice of their medical genius and devotion.

When peace again is with us, countless problems and unpredictable developments will try the judgment and balance of man to the utmost degree and in the solution of post war conditions, the freedom and initiative of the medical profession in its organized activities will be the more effective and constructive in the maintenance of health standards and of medical education if called upon by the state for collaboration and guidance, rather than for the regimentation of its fabric to political football under centralized control.

Very serious phases demanding expert judgment and freedom will come for management and solution in the interest of the returning armies in which medical criterion and experience must exercise leadership and control.

The Fellowship of the International College of Surgeons, already in great numbers serving in all branches of the armed forces, eagerly looks to full participation in all tasks assigned to it by post-war necessities, in full collaboration with the authorities and in pursuit of the principles of the greatest good for the greatest number.

DESIDERIO ROMÁN

Penicillin—Latest Chemotherapeutic Agent

PENICILLIN, the latest chemotherapeutic agent, was the culmination of Alexander Fleming's life-long search for bacterial inhibitors. It is an organic acid which reacts chemically to form salts and esters.

Fleming first reported in 1929 that the mold *Penicillium notatum* inhibited bacterial growth. R. J. Dubos's investigations of antibacterial effect of an extract of soil bacillus followed, the results being published in 1939. This renewed interest in antibacterial agents of biologic origin. In England H. W. Florey and associates perfected the drug sufficiently to permit clinical use.

Florey, while on a visit to the United States, drew the attention of the National Research Council to the possibilities of this drug. The range of organisms affected by penicillin is selective, though wide, including nearly all *staphylococci, gonococci, meningococci* and *Micrococci catarrhalis.*

Optimal dosage for each type of infection has not as yet been determined. It varies depending on the type and severity of the infection from 40,000–50,000 Oxford units a day to 100,000–120,000 Oxford units a day.

Local, intravenous or intramuscular administration is recommended, depending on convenience, practicality and comfort of the patient.

In August 1943 a report was published by the Committee on Chemotherapeutic and Other Agents of the *National Research Council,* based on results obtained with penicillin in 500 cases of various types of infection by 22 groups of investigators.

Certain facts were brought out by this investigation:

1. Staphylococcic, gonococcic, pneumococcic and hemolytic-streptococcic infections respond to penicillin, and it is of particular value in sulfonamide-resistant gonococcic infections.

2. Results in bacterial endocarditis are disappointing.

3. In staphylococcic infections, a total of 500,000 to 1,000,000 Oxford units over a period of 10 days to two weeks is required for the average patient, beginning with 10,000 units every two or three hours.

4. In sulfonamide-resistant cases of gonorrhea, satisfactory results are obtained within forty-eight hours with 100,000–160,000 units.

5. The use of 100,000 units over a period of three days usually brings recovery in pneumococcic pneumonia.

6. Injection directly into the pleural cavity or subarachnoid space is advised in treatment of empyema or meningitis.

Since this report, more than 3000 cases have been treated with essentially the same results.

The effectiveness of penicillin in treating infected wounds and gas gangrene make it of especial value on the battlefield. Excellent results have also been obtained in cases of ocular infections, mastoiditis, meningitis, syphilis and gynecologic infections.

It is contraindicated, not because it is injurious to the patient but because it is ineffective, in all gram-negative bacillary infections, in tuberculosis, acute rheumatic fever, Hodgkin's disease, leukemia, ulcerative colitis, malaria, poliomyelitis, blastomycosis, virus infections and cancer.

At present penicillin is available in two salts: penicillin sodium and penicillin calcium.

Further investigation will afford more information in regard to dosage and undoubtedly will furnish a greatly widened field of use.

M. T.

THIS IS YOUR COUNTRY TO HAVE AND TO HOLD

KEEP HER FOREVER SAFE AND STRONG

BUY MORE AND MORE WAR BONDS AND STAMPS

CHAPTER NEWS

CHINA CHAPTER

News has been received from the recently organized China Chapter of the International College of Surgeons giving detailed information concerning its officers, whose photographs and curriculum vitae appear below.

DR. JAMES K. SHEN

Dr. Shen, F.I.C.S., was born in 1898. His medical education was obtained at the School of Medicine, Western Reserve University, Cleveland, Ohio, from which he obtained his M.D. in 1924. Dr. Shen served as Intern, Lakeside Hospital, Cleveland (1924–26); Assistant Resident Surgeon, Peiping Union Medical College (1926–27) and Chief Resident Surgeon (1927–29); Chief Surgeon, Methodist Hospital, Wuhu (1929–30); Vice-Director and Head of Surgical Dept. of National Central Hospital (1936–41); Dean, Army Medical College (1934–36). At present Dr. Shen is Vice-Director, National Health Administration of the Executive Yuan; Honorary Professor of Surgery and Honorary Head of the Surgical Department of National Shanghai Medical College; President of the Chinese Medical Association. Dr. Shen is President of the China Chapter of the International College of Surgeons.

Dr. Shen is the author of several communications to scientific publications: "Tea in the Treatment of Burns"; "End-to-end Aseptic Intestinal Anastomosis"; "The Application of Matas' Principle in the Treatment of Varicose Aneurysm"; "Diagnosis of Acute Appendicitis"; "Erythromelalgia."

EUGENE CHAN

Dr. Chan, a graduate of Boston University School of Medicine in 1927, was born in China, December 22, 1899. He holds the degree of B.S. (1925); M.D. (1927); D.N.B. (U.S.A.) 1930 and American Board of Ophthalmologic Examiners (1931). Dr. Chan's past appointments include: Adolph Lewisohn Fellow, Johns Hopkins University (1929–34); Assistant in Ophthalmology, Johns Hopkins University (1932–34); Head, Dept. of Ophthalmology, Cheeloo University and Hospital (1934–39); Chief, Tsinan Rotary Eye Clinic (1937); Visiting Professor, National Central University (1942); Visiting Ophthalmologist, Fu Chen Memorial Hospital (1942–43). His present appointments are: Professor of Ophthalmology, West China Union University (1939); Head, Department of Ophthalmology, United Hospital of Associated Universities (1938); Visiting Ophthalmologist, Central Military Academy Hospital (1942); Visiting Professor, Yenching University, 1943. Dr. Chan is Vice-President of the China Chapter of the International College of Surgeons.

The medical publications of Dr. Chan include numerous articles in English, Chinese, German and Spanish, as well as a book in Chinese, *Diseases of the Eye*, written in collaboration with Dr. D. S. Shen.

DR. GORDON KING

Dr. King was born in England in 1900. He was graduated from London Hospital Medical College, University of London, 1924. In addition he holds the following degrees: M.R.C.S. (Eng.), L.R.C.P. (Lond.), 1924; F.R.C.S. (Eng.), 1926; F.R.C.O.G., 1931. Dr. King has been House Surgeon, London Hospital (1924–26), Associate in Obstetrics and Gynecology, Peiping Union Medical College (1927–31); Prof. of Obstetrics and Gynecology, University of Hongkong (1938–41). Since 1942 Dr. King has been Visiting Professor and Head of the Department of Obstetrics and Gynecology, National Shanghai Medical College, Chungking. Dr. King is Executive Secretary and Treasurer of the China Chapter of the International College of Surgeons.

Dr. King's publications include: "The Value of the Levulose Tolerance Test for Hepatic Efficiency in the Diagnosis of Pregnancy Toxemia"; "Eclampsia in Chinese Patients: A Study of 33 Cases"; "The Tubal Factor in Sterility among Chinese Women"; "The Diagnostic and Therapeutic Value of Utero-tubal Insufflation"; "Utero-tubal Insufflation, an Analysis of the Results of 635 Insufflations Performed by the Kymographic Method."

CHARLES CHANG

Dr. Chang is a native of China. He was born January 18, 1895. He attended Mukden Medical College, Mukden, Manchuria, from which he was graduated in 1919. Dr. Chang was Professor of Anatomy and Surgery, Mukden Medical College (1930–35), and Professor of Anatomy, Medical College, Central University (1936–40). At present he is Chief Surgeon, National Northwest Hospital (1941) and Professor of Anatomy and Surgery, National Northwest Medical College (1941). Dr. Chang is a Member of the Board of Governors of the China Chapter of the International College of Surgeons. Dr. Chang has written a number of articles on surgical subjects, among them: "Some Experiences in Skin Grafting"; "Hyperabduction Methods in Reducing Old Standing Dislocation of the Shoulder Joint"; "Phrenicectomy in the Treatment of Pulmonary Tuberculosis"; "The Orr Treatment of Osteomyelitis and Compound Fractures"; "Some Observations on Northern Chinese Skulls"; "Bladder Stone in Manchuria."

Chinese Chapter officers. Top row, left to right: Dr. Eugene Chan, Vice-President; Dr. James K. Shen, President; Dr. Gordon King, Secretary and Treasurer. Bottom row, left to right: Drs. Henry I. Chen, M. L. Hu, Charles Chang. Members of the Board of Trustees.

HENRY I. CHEN

Dr. Chen was born in 1901 and was graduated from Peiping Union Medical College in 1928. Dr. Chen's past and present appointments are: Chief Surgical Resident (1931–32) and Associate, Dept. of Surgery (1932–34), Peiping Union Medical College; Visiting Surgeon, Hospital for Ruptured and Crippled, New York (1935–36); Visiting Surgeon (1934–35) and Head of Surgical Department (1936–38), Central Hospital, Nanking; Head of Surgical Dept., College of Medicine, National Central University, 1940. Dr. Chen is a Member of the Board of Governors of the China Chapter of the International College of Surgeons.

Dr. Chen has written: "Composite Tumors of Salivary Glands"; "Ankylosis of Jaw"; "Association of Intra-thoracic Lesions with Osteo-arthritic Tuberculosis."

M. L. Hu

Dr. Hu was graduated in medicine from National Peiping Medical College (1921) and Harvard University School of Medicine (1923). Dr. Hu is at present a member of the Head, Ear, Nose and Throat Department of Central University Medical College. He served previously as Associate in Oto-Laryngology, Peiping Union Medical College and Graduate Assistant in Massachusetts Eye and Ear Infirmary, Boston. Dr. Hu is a Member of the Board of Trustees of the China Chapter of the International College of Surgeons.

Dr. Hu is the author of several articles published

in Chinese medical publications: "Puncture and Irrigation of Maxillary Sinus"; "Lateral Sinus Thrombosis of Otitic Origin"; "Chronic Frontal Sinusitis."

VENEZUELA

THE INSTITUTE OF EXPERIMENTAL SURGERY OF CARACAS, VENEZUELA

Volume I, 1942, of the Annals of the Institute of Experimental Surgery is dedicated to Dr. Manuel Corachán García, F.I.C.S., and the rôle he played in the founding of the Institute of Experimental Surgery of Caracas.

A vivid editorial describes the meeting in Paris between Dr. Corachán, then a refugee from Spain, and Dr. Rafael Ernesto López, Minister of Education from Venezuela, as the result of which Dr. Corachán went to Venezuela in the middle of 1937. There he founded the Institute of Experimental Surgery, thus initiating a new era of medical progress in Venezuela.

In the obituary notice which follows is mentioned the Corachán award, consisting of a monetary grant, a diploma and the publication of the prize winning thesis, donated by Dr. Corachán to the Institute of Experimental Surgery.

On learning of the death of their Spanish Regent (Corachán), the International College of Surgeons adopted a resolution, published in the *Anales,* to establish the *Manuel Corachán García oration,* to be given at each International Assembly. Dr. Herman de las Casas, Caracas, was chosen to deliver the oration at the Fourth International Assembly, but delegated the task to Dr. Rafael Ernesto López.

Prof. J. Rojas Contreras describes in this volume the newly created chair of Surgical Technic established in the Institute of Experimental Surgery.

There follows a description of the purposes and tasks of the Institute, delivered by Dr. Manuel Corachán, October 16, 1939. Corachán believed that mere knowledge of anatomy and the acquisition of factual knowledge was not sufficient to form a surgeon of skill with clear judgment. Oral teaching should be supplemented by manual skill and mental development; anatomy, by physiology and pathology. The student should have experience in surgical clinics and acquire dexterity by practice on lower animals and cadavers.

The Institute is under the directorship of Dr. Herman de las Casas, F.I.C.S., who is known to our readers as an energetic, noteworthy outstanding member of our organization. His organizing ability and "stick-to-itiveness" are well known, and his ideals as well as his ingratiating personality have attracted to him many admirers and devoted friends.

Space does not permit entering into a discussion of all the excellent papers embodied in this opus, but a brief outline may be in place here. Professor Rojas discusses "The Chair of Surgical Technique in the Institute of Experimental Medicine." His analysis of the work done is enunciated and an outline for future activities sketched.

This is followed by an article on "Gastro-enterostomy," by Ignacio Combellas. It opens with an introduction and is followed up in the second part by a historical review of gastric surgery in Venezuela. The statistical study of the various forms of surgical procedures is illuminating. This is followed by a description of the history of posterior gastro-enterostomy, its technics, complications and how to remedy them. The third part of the work begins with an evaluation of the information gained

from experimental studies in this connection. This is very thorough, as are the other parts of the article, *i.e.*, it begins with the preoperative care, anesthesia, selection of animal instrumentarium, materials used, postoperative care, x-ray studies and record of x-ray findings. This is followed by various technics of the operation used, which are illustrated, and a summary of results charted. The conclusions are briefly as follows: (1) the fundamental dangers of gastro-enterostomy are: hemorrhage at the stoma; disruption of the suture; necrosis of the jejunum (if it is not opened at the proper level); necrosis of the transverse colon through ligature of its blood supply. (2) Peritonitis was only exceptionally observed, and, in the case of the dog, a good operative field was sufficient to prevent peritonitis. (3) To protect the operative field, it is sufficient to have a large compress between the stomach and the jejunum across the future proposed anastomotic opening. (4) The compress can be used to raise the zone of anastomosis and permit thorough inspection of the corners. (5) Good hemostasis is essential. (6) Two suture lines are usually sufficient. (7) The surgeon should pay particular attention to the beginning of the suture. (8) To guarantee the solidarity of the corners, the authors recommend not to terminate a suture in any corner, but to bring the thread through the middle of the last stitch and to anchor each suture on the anterior surface. (9) Posterior gastrojejunostomies the authors consider more dangerous than the anterior form of the operation. (10) To facilitate execution of the operation in the dog, one may fix the stomach to the colon with one or two interrupted sutures. (11) If the stoma is well situated, it functions normally. (12) Dogs frequently succumb a month following gastrojejunostomy without the cause being known. (13) The mortality of gastroenterostomy is closely related to the perfection of operative technic.

A splendid article on "Renal Circulation after Compression of the Renal Artery, by Goldblatt's Method," by Dr. Frank P. Corrigan, F.A.C.S., F.I.C.S. (Hon.), is an illuminating contribution. It summarizes the influence of the circulation of the kidney upon hypertension. In the experimental animal, Corrigan caused a rise of the blood pressure by partial ligature of the renal artery.

The established hyperpiesis is then corrected by an attempt to straighten out the tortuosity of the renal vein. This is accomplished by a nephropexy. An ingenious explanation is offered: Constriction of the artery by reason of changed conditions, creates capillary dilatations, while straightening the renal vein tends to deplete the capillaries.

An illuminating article on "Surgery of the Esophagus," based upon experimental and clinical studies is contributed by Dr. Mario Mazzei Uzcátegui. Here also various phases of this important question are entered into and discussed. A very systematic course is pursued here, and various pathological conditions affecting the esophagus are evaluated from clinical and experimental deductions.

This paper has four divisions: first, historical aspects; second, anatomy and surgical anatomy; third, various forms of surgical and nonsurgical treatments, comprising such operations as esophagectomy, esophagogastrostomy, surgery of diverticula and stenosis of the esophagus; the fourth section embodies the research work done on lower animals and the results obtained from operations performed on 21 dogs. The author considers submucous esophagoplasty the

best procedure. He records seven successes on lower animals and cites two cases on human beings performed at the Vargas Hospital.

Of course the scholarly article by the late Prof. Corachán on the Institute has been already alluded to above. It is a penetrating evaluation of the work of the Institute.

This section is followed by an article on "Anesthesia and Experimental Surgery" by Dr. Ricardo Baquero González, the Associate Director of the Institute of Experimental Surgery. The various drugs used are described, the methods of inducing anesthesia are discussed and some very pointed, practical deductions are drawn.

A timely contribution is that of Dr. Enrique Zamora Conde on "Wounds and Sutures of the Cardiac Muscle." Like the other contributions to this fine volume, this is also extremely painstaking and thorough, pointing out the various forms of cardiac wounds and the methods of their repair, following cardiographic studies showing results and reactions. These conclusions are drawn from the experimental work on 13 dogs. Electrocardiograms were taken before injury and every two hours after infliction of the wound. Smaller wounds produce occasionally a monophasic alteration of the tracing. Besides the alterations of the Pardee curve there are other changes which have been discussed. The usually employed operative technics are discussed and evaluated. Of the 13 dogs, 9 died. Infection was responsible for mortality in the majority of cases. The local use of sulfonamides has seemed satisfactory.

A valuable study on "Nephropexy" in dogs is contributed by Francisco Baquero González. Here also a systematic approach to the subject is noted. From experimental studies using all methods to which the animals were subjected, the author concludes that the capsular technics of Marion and Albarrán are best.

This fine volume concludes with an article by Dr. R. D'Arago Flores, an experimental study on the treatment of the appendiceal stump in appendectomies. It seems that these fine workers, all of them, are imbued with the spirit of exactitude and follow a systematized method of approach. The author of this last article has used 27 dogs as experimental material and resorted to three different types of treatment of the appendiceal stump. In 12 cases it was ligated and left free in the abdominal cavity. He observed that after 24 to 96 hours all had necrosis of the stump, adhesions and purulent collection. Other animals were sacrificed after the seventh day. They had strong adhesions and good healing of the stump. In 8 the stump was ligatured and inverted by a double purse-string suture. An abscessed pouch was found in 6 after 48, 72 and 96 hours, besides hemorrhagic infiltration and ulcerations of the cecum. The other two dogs, who were sacrificed after 8 and 10 days, revealed adhesions and good healing. Both conditions were present in a dog reoperated on on the fourth and eighth days. In seven animals the stump was included in the pouch without ligature. In five animals, after 98 hours, the same hemorrhagic and ulcerous conditions were present, followed by perfect healing after five to seven days. The author concludes that the series of cases operated on is too small to draw any final conclusions.

This book embodies a wealth of worth-while material and should be perused by all progressive surgeons. It is of great value from a number of standpoints: (1) It exemplifies the scientific spirit that pervades the Institute

of Experimental Medicine of Caracas. (2) The bibliographies, the historical studies and the thoroughness of the work are exemplary. (3) Finally, if placed in the hands of the young surgeon, it will act as a stimulus not only to him, but to other institutions where scientific surgery is practiced. The director of this fine organization and his co-workers are holding the beacon light of progress high. They are setting a fine example for others to follow.

MEXICAN CHAPTER

Prof. Dr. Gustavo Argil, F.I.C.S. (H.C.), has been named corresponding member of the Society of Internal Medicine of Buenos Aires.

The Eduardo Licéago Medal has been conferred on **Dr. Bernardo J. Gastellum**, F.I.C.S., of Mazatlán, Mexico, in recognition of his distinguished services lent to the Dept. of Public Health of the United States of Mexico.

Prof. Antonio Torres Estrada, F.I.C.S., Specialty Regent in Ophthalmology of the Mexican Chapter of the International College of Surgeons, has just been named director of the Hospital of Nuestra Señora de la Luz.

U. S. S. R.

Recently the **Moscow State University** celebrated its opening session on scientific progress. Felicitations were sent by the International College of Surgeons. Prof. Ilya Jalkin, Director of the Moscow State University replied by cable, extending the thanks of the Moscow State University for the message sent by the International College of Surgeons.

UNITED STATES CHAPTER

Dr. Max Thorek, International General Secretary of the International College of Surgeons, has announced the inclusion in his will of a provision for the establishment of a fund which he has bequeathed to the United States Chapter of the International College of Surgeons, to afford aid to medical students who find themselves financially distressed during the course of their studies. To the central body of the International College of Surgeons, Dr. Thorek is bequeathing all royalties accruing from his writings. This represents a substantial sum, and will be perpetuated by members of the College who will continue to republish his works, the funds thus derived to go into the general fund of the International College of Surgeons, for certain specific purposes which will be announced later.

The **Wisconsin Guild** held its annual meeting on September 18 at Milwaukee, Wisconsin. Dr. Samuel Higgins presented a paper on "The Rôle of the International College of Surgeons in Postwar Training." This was followed by an interesting discussion of postwar problems in surgical training. The meeting was well attended.

Dr. Alfred A. Strauss, the Illinois State Regent of the United States Chapter of the International College of Surgeons, has been appointed a member of the Chicago Recreation Commission by Mayor Kelly. Dr. Strauss is senior surgeon at the Michael Reese and Mt. Sinai Hospitals of Chicago. He was born in Germany in 1883 and educated at the University of Washington and Rush Medical College. His post-graduate study was done at the Universities

of Vienna and Heidelberg. Dr. Strauss is particularly known for his contributions to gastro-intestinal surgery.

Dr. Alfred A. Strauss

Lt. Comdr. Morris Weintrob (MC), USNR, recently advanced to Fellowship in the International College of Surgeons, has sent the *Journal* a free verse expression of his sentiments on the eve of his embarkation for overseas duty. We are reproducing it below.

PRE-EMBARKATION LEAVE

Once more
I've said goodbye to those I love
As thrice before.
But, this time, soon
I'll sail beyond the sea.

'Twas nice, indeed,
To spend a leave at home
Where reveille and taps
Are never heard.

But days flew by
At e'er increasing speed.
The flight of time
Could no way
Be deterred.

Disturbing thoughts
Throughout the day and night
Play havoc with
My equanimity.

Shall I come back,
If fortune says
'Twill be,
Whole in body and soul
To a future really free?

Or will there be ahead
The same uncertainty?

And will I need to grieve,
Because, in days to come,
My daughters' full grown sons
Will sail beyond the sea?

M. W.

Lt. Comdr. Morris Weintrob

The **Guild Meeting of District No. 3,** comprising Delaware, New Jersey and Pennsylvania, was held in Philadelphia on Feb. 14. Clinics were held in the various city hospitals. The Organiza-

tion Meeting for the election of officers of the Guild was followed by a dinner.

ENGLAND

Mr. James F. Brailsford, F.I.C.S. (See p. 418, *Journal* of the International College of Surgeons, Sept.–Oct., 1944) of Birmingham, England, outstanding British radiologist, has arranged to give a series of lectures on "The Radiology of Bones and Joints" at the request of the medical personnel of the American and British overseas army. Lectures will be delivered at one of the hospitals or at Birmingham University. Mr. Brailsford, who is a member of the Royal College of Physicians and the Royal College of Surgeons, has twice been Hunterian Professor of the Royal College of Surgeons. Consulting radiologist to all the municipal hospitals of Birmingham, Mr. Brailsford is also the author of "The Radiology of Bones and Joints," now in its third edition.

District Regents are being encouraged to hold these meetings.

Dr. Earl Craig

IN MEMORIAM

EARL B. CRAIG, M.D., F.A.C.S., F.I.C.S.

Dr. Earl B. Craig, Fellow of the International College of Surgeons, died on December 17, 1944, following an illness of three months. Dr. Craig was 64 years old. He graduated in medicine in 1906 and his post-graduate work was done at Jefferson Medical College (1908) and in Vienna. For ten years Dr. Craig was Prof. of Gynecology at his alma mater, which department he headed at the time of his death. His medical affiliations include: Philadelphia County Medical Society; Pennsylvania State Medical Society; American Medical Association; American College of Surgeons and the International College of Surgeons. Dr. Craig was certified by the American Board of Obstetrics and Gynecology. He was one of the pioneers of the International College of Surgeons, having been elected to Fellowship in 1937. He was chairman of the original Cap and Gown Committee. Dr. Craig left no survivors. With his passing the College has lost a staunch supporter, a valued member and devoted friend.

PEN PICTURE
of
PROF. DR. HUGO PICARD

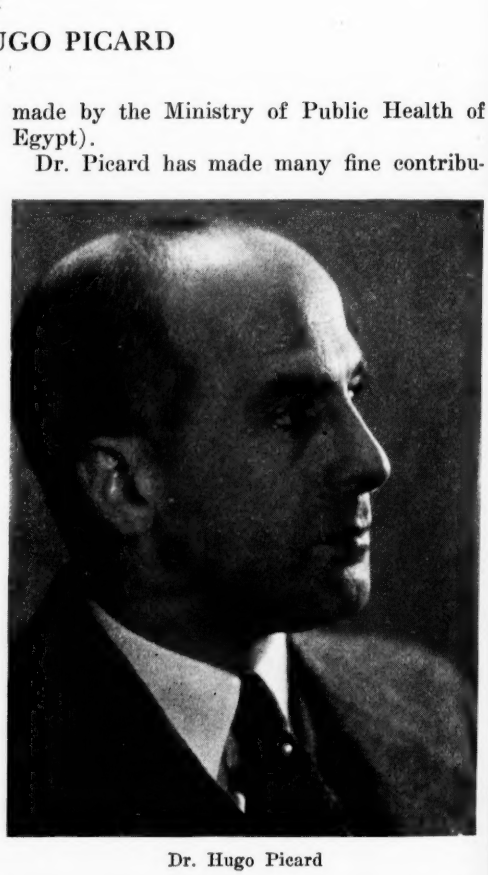
Dr. Hugo Picard, who was awarded a Fellowship in the International College of Surgeons this past year, was born at Konstanz-on-Bodensee, December 15, 1888. His secondary education at Konstanz was followed by a medical course at the Faculties of Medicine of the Universities of Munich, Berlin and Heidelberg. Dr. Picard received his doctorate in medicine from Heidelberg University in 1913, and the following year held the post of Probationer at the Heidelberg Faculty.

During the First World War Dr. Picard served as a military physician in the German Army. Then for one year he was assistant to Prof. Schmieden at the surgical clinic of the University of Frankfurt-on-Main, and from 1919–29, assistant, then chief doctor, of the surgical clinic of the University of Charity, Berlin (Prof. Hildebrand, Prof. Sauerbruch). His numerous duties at this time also included an instructorship in surgery at Berlin University.

Professional advancements followed rapidly in Dr. Picard's career. From chief surgeon of the surgical section and medical director of the new Polyclinic of the Jewish Community of Berlin (1929) and professor extraordinary of surgery at Berlin University (1930), Prof. Picard became chief surgeon of the Jewish Hospital, Cairo (1935).

Medical affiliations include membership on the Committee of the Royal Society of Medicine of Egypt, the Scientific Committee of the Medical Press of Egypt and the Commission of Medical Judges for Accidents to Workmen (election for this position being made by the Ministry of Public Health of Egypt).

Dr. Picard has made many fine contribu-



Dr. Hugo Picard

tions to surgical literature, covering such subjects as breast plastics, fractures, anesthesia, cancer, nephrectomy, hysterectomy and cholecystectomy without drainage, to mention but a few. An article on "Prophylaxis and Treatment of Thrombosis by Temparin" will appear in an early issue of the *Journal* of the International College of Surgeons.

NEW BOOKS

The *Proceedings* of the Institute of Experimental Medicine for the Study and Treatment of Cancer, recently published by Dr. A. H. Roffo,* is a magnificent compendium of the work of the Institute, copiously embellished by excellent photographs and drawings. Initiated in 1909 by experimentation with tumors in rats, the Institute of Experimental Medicine now enjoys a reputation unexcelled in Argentina or any other country.

On Nov. 7, 1922 the Institute opened its doors with a single building with 60 beds, which has grown to an institution comprising 14 buildings, including laboratories, dispensary and school of nursing. The number of patients treated has reached the significant total of 120,000.

The work of the Institute includes the following activities: medical, medico-social, teaching, school of nursing and training of specialized personnel. The medical work in carcinoma consists of a diagnostic dispensary, treatment of ambulatory patients and hospitalization of cancer patients. Public lectures and radio broadcasts supplement the work of the Institute, which also participates in International Cancer week.

Improved diagnosis is responsible for the enormous increase in the number of cases detected in the early stages of development. In 1924 the percentage of patients coming to the Institute for medical consultation from one to three months after the first symptoms were noted was 3.15; by 1943 this figure had increased to 69.66, or approximately 70 per cent of the total number of cases treated. An analysis is made for the years 1940–43 of the number of patients treated, according to types of carcinoma.

The relationship of cancer and sex is treated at length and morbidity figures given for males and females for the years 1926–43, the latest figures given being 56.54 per cent occurrence in females and 43.45 per cent in males. Percentages are also given for morbidity according to localization and sex for the years 1941–43.

Tables follow for clinical examinations according to localization, as well as for figures on the histologic type and localization of tumors which are observed in the biopsies of the Institute and other hospitals.

Various treatments in use in the Institute include roentgen therapy, both high and low voltage, radium, radon and surgical treatment. Types of equipment and methods of application are given and results charted.

Part IV of this instructive volume consists of considerations of various types of cancer. The frequency of occurrence, localizations, histologic forms, pathological and clinical antecedents, ages of persons affected, treatments and results obtained therefrom are considered in cancer of the skin, breast, tongue, throat, rectum and other parts of the body.

* *Proceedings* of the Institute of Experimental Medicine for the Study and Treatment of Cancer. A. H. Roffo, Buenos Aires, 1944.

A list of publications of bulletins of the Institute, reviews received by its library, courses given by the recently created chair of cancerology, the work of the Argentinian Society for the study of cancer, lectures given on the weekly conference hour and over the radio, the anti-tobacco crusade, creation of the cancer society in October 1942, the regional battle against cancer, courses given in the school of nurses, the library—all these various activities are described.

Floor plans and photographs of the buildings and medical activities add to the pictorial interest of the volume, which contains an excellent *exposé* of the crusade against cancer, not only in the Institute itself but in Argentina. The volume should be in the library of everyone interested in the cancer problem.

Bunnell's new book on *Surgery of the Hand* * is a masterly contribution to contemporary surgical literature and a veritable mine of information. It surpasses everything written on this subject in English or, for that matter, in any language. The text is clear and concise. Impressive illustrations supplement the text to the fullest advantage. To single out a particular chapter would do injustice to the others. Yet from a practical standpoint the section dealing with tendon repair, replacement and transplantation is particularly admirable in its perfection. Another highlight of the book is the chapter on the intrinsic muscles of the hand, reflecting the author's lifelong studies and most original contributions. If there is such a thing as a "best" scientific work on a particular subject, this certainly is representative of that class.

The excellent symposium on abdominal surgery in the *Surgical Clinics* ** for February, 1944 brings out the fact that both physiologic and pathologic abnormalities are encountered, and that knowledge of the abnormalities involved has caused a lowered mortality rate. While the authors do not touch directly on war surgery, many physiologic and pathologic conditions are a direct consequence of trauma, which is such a large factor in war surgery. The issue contains contributions by several members of the International College of Surgeons, namely, Drs. Moses Behrend, Raymond McNealy, Karl Meyer and Alfred Strauss. Alexander Brunschwig, Warren Cole and a number of other authorities have contributed articles on the operative phase of gallbladder, intestinal and abdominal disturbances. Illustrations, though few, are on the whole good. This is one of the customarily worthwhile volumes of the Clinics for 1944.

Samuel Weiss, who has had many years' teaching experience at the New York Polyclinic Hospital and has confined himself in his extensive private and hospital practice almost exclusively to diseases of the gall bladder and bile ducts, was well prepared to publish an instructive series of lectures on this subject.*** Some of the outstanding chapters are those on "Anatomy of the Biliary Tract,"

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* Surgery of the Hand. Sterling Bunnell. J. B. Lippincott Co., Philadelphia, 1944. $12.

** Surgical Clinics of North America. February 1944. Vol. 24, No. 1. W. B. Saunders Co., Philadelphia, 1944. Price, Cloth $16. Paper, $12.

*** Clinical Lectures on the Gallbladder and Bile Ducts. Samuel Weiss. The Year Book Publishers, Inc., Chicago, 1944.

"Physiology," and "History Taking." That contributed by Dr. Ernest E. Smith on "Radiology of the Gallbladder" and that by Dr. Harry M. Eberhard on "Diagnostic and Therapeutic Duodenal Drainage" are noteworthy contributions to the volume. The lectures are arranged in orderly fashion and cover the most important disturbances of the gall bladder and bile ducts thoroughly and adequately in a manner that is clear and understandable. The up-to-date bibliographies are of especial value. This book is recommended for the general practitioner, the internist and the gastroenterologist.

The latest edition of Babcock's *Principles and Practice of Surgery* * is without doubt one of the finest surgical texts to appear. The material has been brought up to date to include such branches of war surgery as artillery projectiles, blast injuries, gunshot wounds and modern chemotherapy. Chapter 14 on the lost art of bandaging is timely. The revision is thorough and the treatment of the subject matter interesting. The discussion of the Position on the Operating Table would have been more complete if it had included the effect of the various positions on the *rectus abdominis* muscle. Pages 1232–1234, which include the appendix, give normal blood and chemical constituents as well as functional tests. This information is especially valuable to the student. Such illustrations as those in Figs. 63, 64, 79 and 80 are excellent for teaching purposes, since they are more descriptive than many paragraphs. Fig. 191, however, shows a method of removing a Thiersch graft which would surely endanger the left hand of the surgeon if the razor were handled this way. In the lengend for Fig. 962 the name "Ochsner" is misspelled. This is mentioned because so many people mispronounce the treatment according to this erroneous spelling. On the whole the illustrations are excellent, the extensive bibliography is well placed and the book can be most highly recommended.

A genuine contribution to the field of gynecology and obstetrics has just been made by Clarence Taber and Mario Castallo with their compact, indexed dictionary ** printed in a legible type and convenient format. The comprehensive treatment of this specialized field is accomplished by the compiling not only of a specialized vocabulary, but also of a "subject" dictionary in which some topics are treated at considerable length. Subtopics have been listed in alphabetical order, a real time-saving device. Another valuable adjunct is the Fact-Finding Index, followed by the most frequently used medical abbreviations. Numerous excellent illustrations of various stages of parturition and of various positions of fetal presentation clarify the subjects treated. Taber's work, the only dictionary of its kind compiled to date, is of especial value not only to the gynecologist and obstetrician, but it also fills a long-felt need of the nurse and busy general practitioner.

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* Principles and Practice of Surgery. Wayne W. Babcock. Lea & Febiger, Philadelphia, 1944. $12.

** Taber's Dictionary of Gynecology and Obstetrics. Clarence Wilbur Taber and Mario A. Castallo. F. A. Davis, Philadelphia, 1944. $3.50.

From Mexico comes a fine monograph on cancer by Dr. Conrado Zuckermann, F.I.C.S.* Its one hundred pages are packed with suggestions for diagnosing, treating and preventing cancer. He devotes the first four sections to diagnosis of cancer in the early stage by clinical analysis and histopathologic study of the tissue removed by biopsy or of the tumor after operation. The author describes lucidly the procedure for the diagnosis of cancer of the skin, breast and accessible cavities of the body by palpation and other physical means, with special reference to cancer of the mouth and external genitalia, and ends with the hope that a laboratory procedure, a general reaction of the cancerous individual like the Wassermann reaction for syphilis, may in the near future make possible the early diagnosis of cancer of the stomach and other internal organs. Special sections are devoted to clinical diagnosis and surgical treatment of cancer of the breast, the cervix uteri, tumors of the breast and cerebral tumors. Zuckermann believes that modern nomenclature of brain tumors leaves much to be desired. Favorable prognosis of brain tumors depends on location of the tumor, its accessibility, extension and relations in the case of benign growths; in malignant growths histology plays an important rôle besides. Zuckermann concedes the possibility of hemotransmission of cancer by contact or by accidental inoculation of the cancerous cells to the surgeon through a wound during operation. Prevention of cancer depends on early clinical study of the case, radical removal of any suspicious neoplasm and avoidance of any undue chronic irritation. The activities of the Institute for the Prevention of Cancer in Buenos Aires, under the direction of Dr. Roffo, are described by Dr. Zuckermann.

The book is well written. The short but complete descriptions of the most recent studies on the etiology, diagnosis, treatment and prevention of cancer will be of interest to both surgeon and pathologist.

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* Cancer Studies. Conrado Zuckermann. Mexico, D.F., Mexico, 1944.

The Fifth International Assembly of the International College of Surgeons will be held in one of the Latin-American countries. The place and time of meeting will be announced in the next issue.